

# SERVICE MANUAL

AM/FM STEREO RECEIVER

## SX-838

KCU, F, GN

**NOTE:**

MODEL SX-838 COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:

Round label on rear panel	Voltage	Type
KCU	120V only	UL (U.S.A.) and CSA (Canada) approved
F	5-position selector	General export model
GN	220V only	SEMCO (Sweden), NEMCO (Norway) and DEMCO (Denmark) approved

 **PIONEER®**

# CONTENTS

## About 220V only model labeled "GN"

This model whose rear panel is labeled "GN" circular mark operates only on 220V, substantially in its circuit design from two other models. When repairing this model, please see the manual on page 75 and the followings which include such items as Circuit connection diagram, Miscellaneous parts list, Schematic diagram of power supply circuit assembly, P.C. board pattern and its parts list.

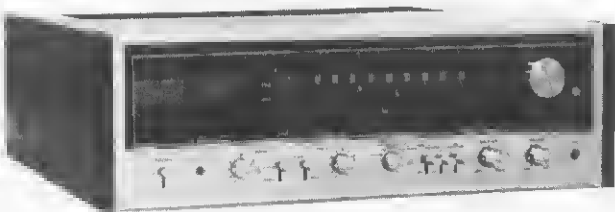
Before servicing, also please do not fail to check to see if the "GN" mark is labeled on the rear panel.

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FOR 220V ONLY MODEL

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# 1. SPECIFICATIONS

## SEMICONDUCTORS

FETs .....	4
ICs .....	4
Transistors .....	43
Diodes .....	24

## AMPLIFIER SECTION

### Continuous Power Output

20Hz~20kHz

(Both channels driven).....	50W + 50W (8Ω)
	60W + 60W (4Ω)

1kHz .....	55W + 55W (8Ω)
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(Both channels driven).....	70W + 70W (4Ω)
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### Harmonic Distortion

(20Hz~20kHz Continuous

Power Output) .....

(1W+1W, Power Output)...

### Intermodulation Distortion

(Continuous Power

Output) .....

(1W+1W, Power Output)...

### Power Bandwidth

(IHF, Both channels

driven) .....

Frequency Response .....

Input Sensitivity/Impedance

POWER AMP IN .....

Output Speaker .....

Headphone .....

Damping Factor

(1kHz, 8Ω) .....

### Hum & Noise

(IHF, short-circuited,

A Network) .....

Residual Hum & Noise

(8Ω, Pre & Power

amplifier) .....

## PREAMPLIFIER SECTION

### Input Sensitivity/Impedance

PHONO 1 .....

PHONO 2 .....

### PHONO Overload Level

(rms/p-p) .....

MIC .....

AUX .....

TAPE PB 1, 2 .....

TAPE PB 2 (DIN

connector) .....

### Output Level/Impedance

TAPE REC 1, 2 .....

TAPE REC 2

(DIN connector) .....

PREOUT .....

### Harmonic Distortion

(20Hz~20kHz) .....

### Frequency Response

#### PHONO

(RIAA equalization) ....

AUX, TAPE PB .....

### Tone Control

BASS .....

TURNOVER FREQUENCY:  
200Hz, 400Hz

TREBLE .....

TURNOVER FREQUENCY:  
5kHz, 2.5kHz

### Filter

LOW CUT .....

HIGH CUT .....

### Loudness Contour (Volume

control set at -40dB

position) .....

Hum & Noise (IHF, short-

circuited, A Network)

PHONO .....

MIC .....

AUX, TAPE PB .....

Muting .....

## FM SECTION

Usable Sensitivity (IHF)...

Capture Ratio (IHF).....

Selectivity (IHF) .....

Signal-to-Noise Ratio ....

### Image Rejection

(98MHz) .....

IF Rejection (98MHz).....

Spurious Rejection .....

AM Suppression .....

### Harmonic Distortion

MONO .....

STEREO .....

Frequency Response .....

Stereo Separation 1kHz..

50Hz~10kHz .....

Sub Carrier Suppression .

Antenna Input .....

Muting .....

ON-OFF

## AM SECTION

### Sensitivity (IHF,

Ferrite antenna).....

(IHF, Ext. antenna).....

Selectivity .....

Signal-to-Noise Ratio ....

Image Rejection .....

IF Rejection .....

## MISCELLANEOUS

Power Requirements .....

Power Consumption .....

Dimensions .....

Weight Without Package..

With Package .....

## FURNISHED PARTS

FM T-type Antenna .....

Operating Instructions...

Fuse 4A .....

2A .....

## 2. FRONT PANEL FACILITIES

### SIGNAL METER

For AM and FM station tunings.

AM tuning: Tune the dial pointer so that the SIGNAL meter needle comes to the extreme right.

FM tuning: Both the SIGNAL and FM TUNING meters work together. The optimum point of the SIGNAL meter needle is the same as in AM tuning. Then use the FM TUNING meter.

### SPEAKER BUTTONS

Each of speaker systems A, B, and C is connected to each of output terminals A, B, and C.

By pushing the following:

SPKR-A . . . . . Speaker systems A into operation

SPKR-B . . . . . Speaker systems B into operation

SPKR-C . . . . . Speaker systems C into operation

#### NOTES:

1. When any two pairs of the buttons (A + B, B + C, C + A) are depressed, the corresponding pairs of speaker systems will come into operation. However, operating all three buttons even though depressed at the same time is not possible.
2. Only when listening through headphones, press again the SPKR button(s) in use to OFF (undepressed) from the ON position (pressed).

### POWER SWITCH

Turn this switch ON but wait for some 3 to 6 seconds, during the silence of which the protection circuit eliminates the unpleasant noise not imputed to a receiver fault.

### PHONES OUTPUT JACKS

Accepts stereo headphones.

### BASS CONTROL

Clockwise rotation gives stronger emphasis of the bass range below the turnover frequency (which is selected by the BASS TURNOVER switch). Counterclockwise rotation reduces bass response. This control knob has click-stops.

### BASS TURNOVER SWITCH

This switch selects the frequency below which the bass tone control will begin to act. This "turnover" frequency can be set at 400Hz or 200Hz, to match the characteristics of the room, the program material, or your personal listening preferences.

### LOW CUT, HIGH CUT BUTTONS

LOW . . . . . When the low-pitched rumble (turntable motor or other source) is obtrusive, depress the LOW CUT button to ON. In no interference, leave it undepressed (OFF).

HIGH . . . . . When the high frequency scratch noise (records or other source) is much, depress this button to ON. In no interference, leave it undepressed (OFF).

### FM TUNING METER

While getting the SIGNAL meter needle going to the right, make fine adjustment with the FM TUNING meter whose needle comes to the center (indicating the optimum reception).

### FM STEREO INDICATOR

### MODE BUTTON

Leave this button undepressed (if necessary, depress this to release it when already depressed) for STEREO playback. For MONO playback, depress it. In this case stereo signals for left and right channels will be mixed into mono signal which will be heard from the center of both speaker systems.

### TUNING KNOB

### FM MUTING BUTTON

Leave this button undepressed (in the ON position) while tuning in FM stations. Inter-station noise may interfere with FM reception while tuning between stations. To suppress this noise, leave the MUTING button undepressed (in the ON position). If the low signal strength is due to distance from the transmitter or other influences, depress this button, at which the weak station will be heard with the MUTING "OFF."

### LOUDNESS BUTTON

Depress this button to listen at low volume. The human ear's frequency response varies according to the listening volume. The depressed button compensates for hearing response with emphasis on the bass and treble.

### FUNCTION SELECTOR BUTTONS

For selecting the program source, push each button as follows:

AM . . . . . For AM broadcast reception.

FM . . . . . For FM broadcast reception. The STEREO indicator lights up when the broadcast is in stereo.

PHONO 1 . . . . . For operating a turntable connected to the PHONO 1 input jacks.

PHONO 2 . . . . . For operating a turntable connected to the PHONO 2 input jacks.

MIC . . . . . For using a microphone. Not possible to mix with other program source.

AUX . . . . . For listening to audio equipment (cartridge tape player, TV sound tuner, etc.) connected to the AUX input jacks.

### MIC INPUT JACK

Accepts the plug of the microphone.

### VOLUME CONTROL

Governs both the volume of sound outputs from the speaker systems and from the headphones.

### BALANCE CONTROL

Adjusts the balance between the sound volume from the left and right speaker systems.

### DOLBY NR ADAPTOR SWITCH

When employing Dolby Noise Reduction Adaptor depress this DOLBY NR ADAPTOR to ON.

### TAPE MONITOR (1, 2) SWITCHES

Monitor the recorded sound while recording with a tape deck. Also possible to play back tapes as follows:

- 1 . . . . . With a tape deck connected to the TAPE 1 jacks (REC and PB), either monitoring of recording in progress of playing back is possible.
- 2 . . . . . With a tape deck connected to the TAPE 2 jacks (REC and PB or REC/PB connector), the same as in 1 above is possible.

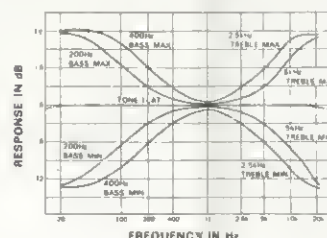
### TREBLE TURNOVER SWITCH

This switch selects the frequency above which the treble tone control will begin to act. This "turnover" frequency can be set at 2.5kHz or 5kHz, to match the characteristics of the room, the program material, or your personal listening preferences.

The effect of the tone controls and turnover switches is illustrated in the below.

### TREBLE CONTROL

Clockwise rotation gives stronger emphasis of the high range above the turnover frequency (selected by the TREBLE TURNOVER switch). Counterclockwise rotation reduces high-range response. This control knob has click-stops.



### REC SELECTOR SWITCH

Each setting this switch to FM, PHONO and DUPLICATE permits recording on tape of the tape deck connected to the TAPE 1 terminals of the SX-838. Recording from speaker systems can be made in the ordinary manner only when this switch is set to SOURCE.

FM: FM broadcasts can be recorded.

PHONO: Disc records on the turntable can be recorded.

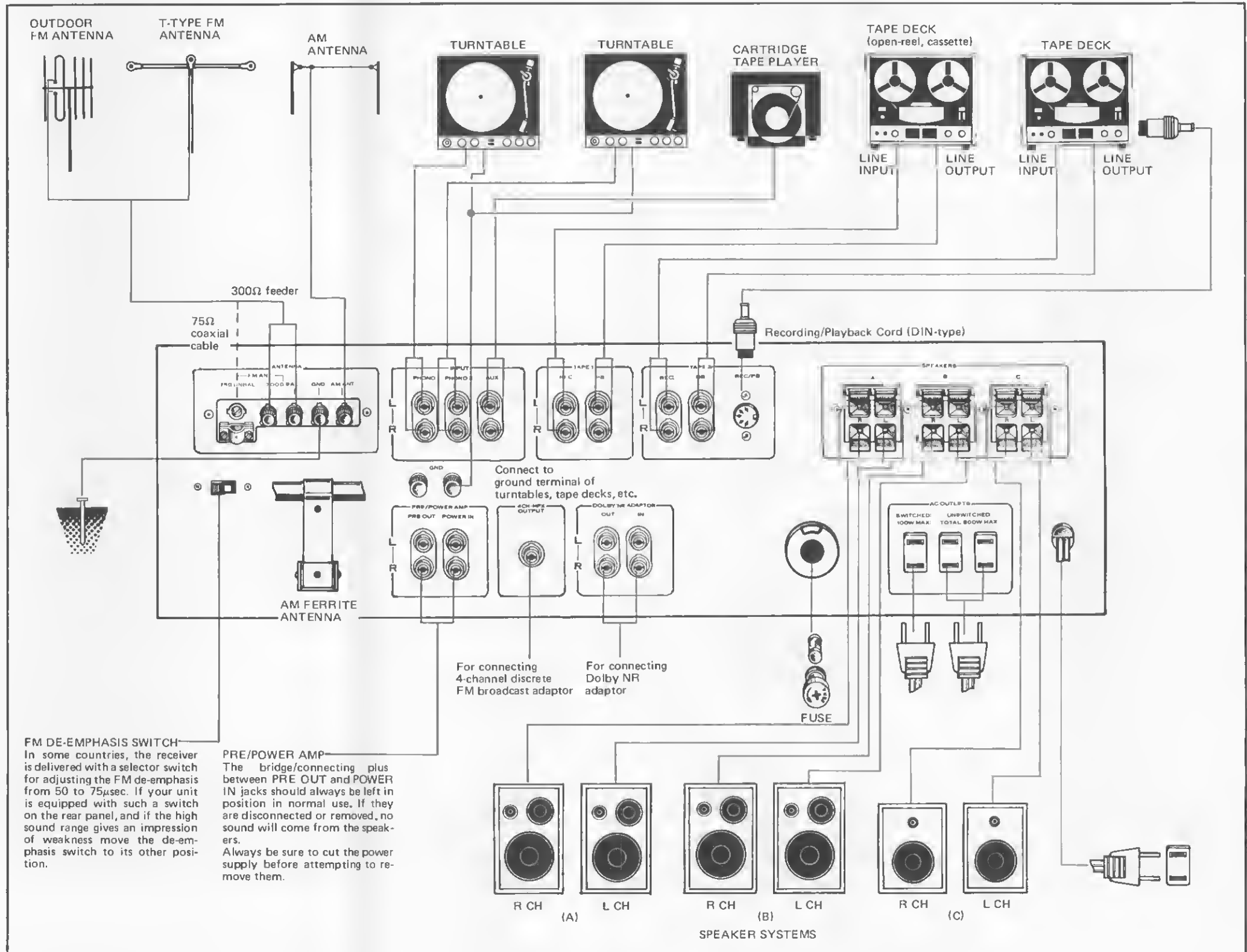
SOURCE: For all other modes of operation such as record playing, radio reception, etc.

DUPLICATE: Recorded tape can be duplicated or edited with two tape decks.

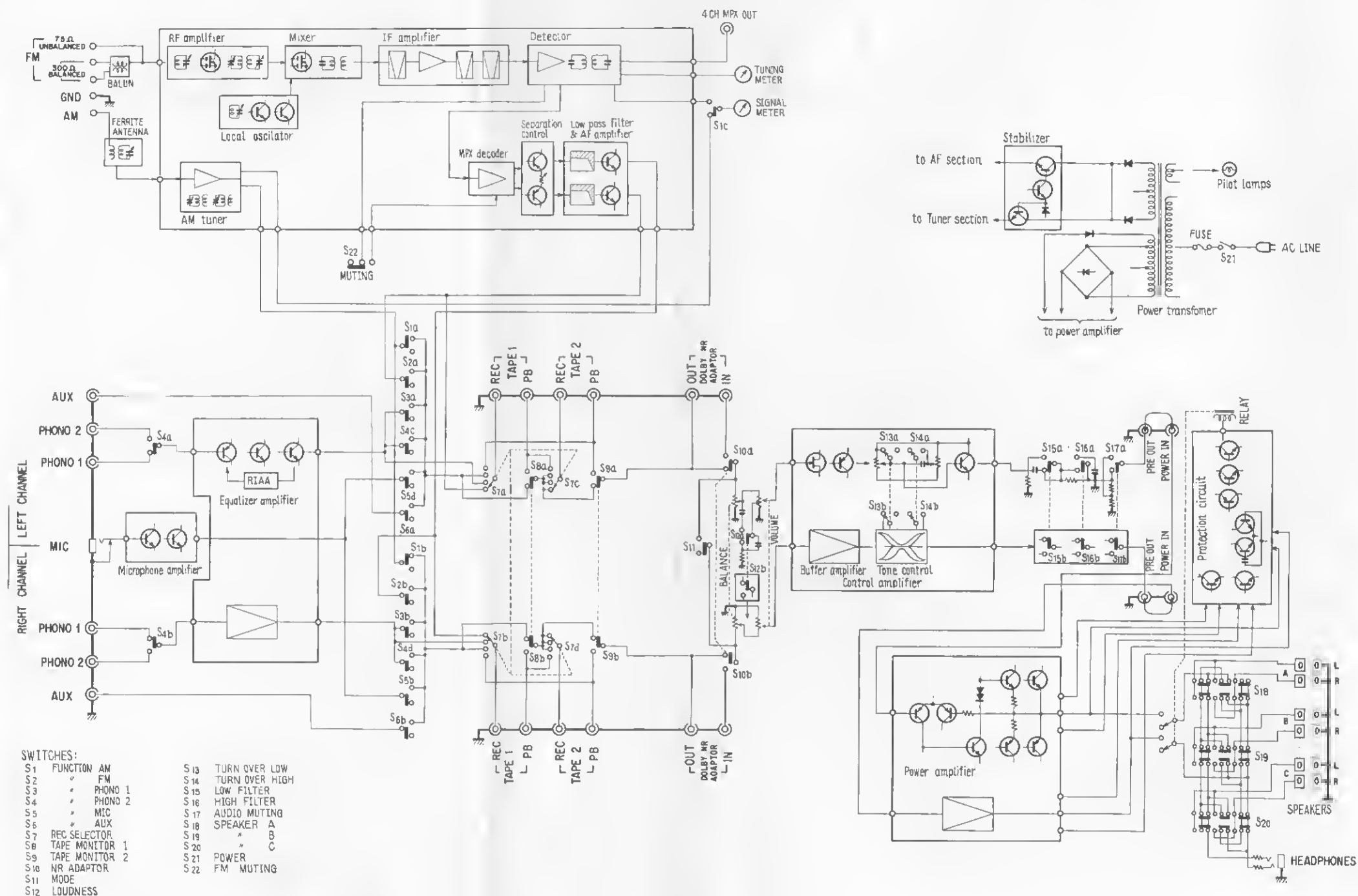
### AUDIO MUTING BUTTON -20dB

Depress this button to mute the audio input to -20dB. No need to turn down the VOLUME control on each occasion for your convenience.

## 3. CONNECTION DIAGRAM



# 4. BLOCK DIAGRAM



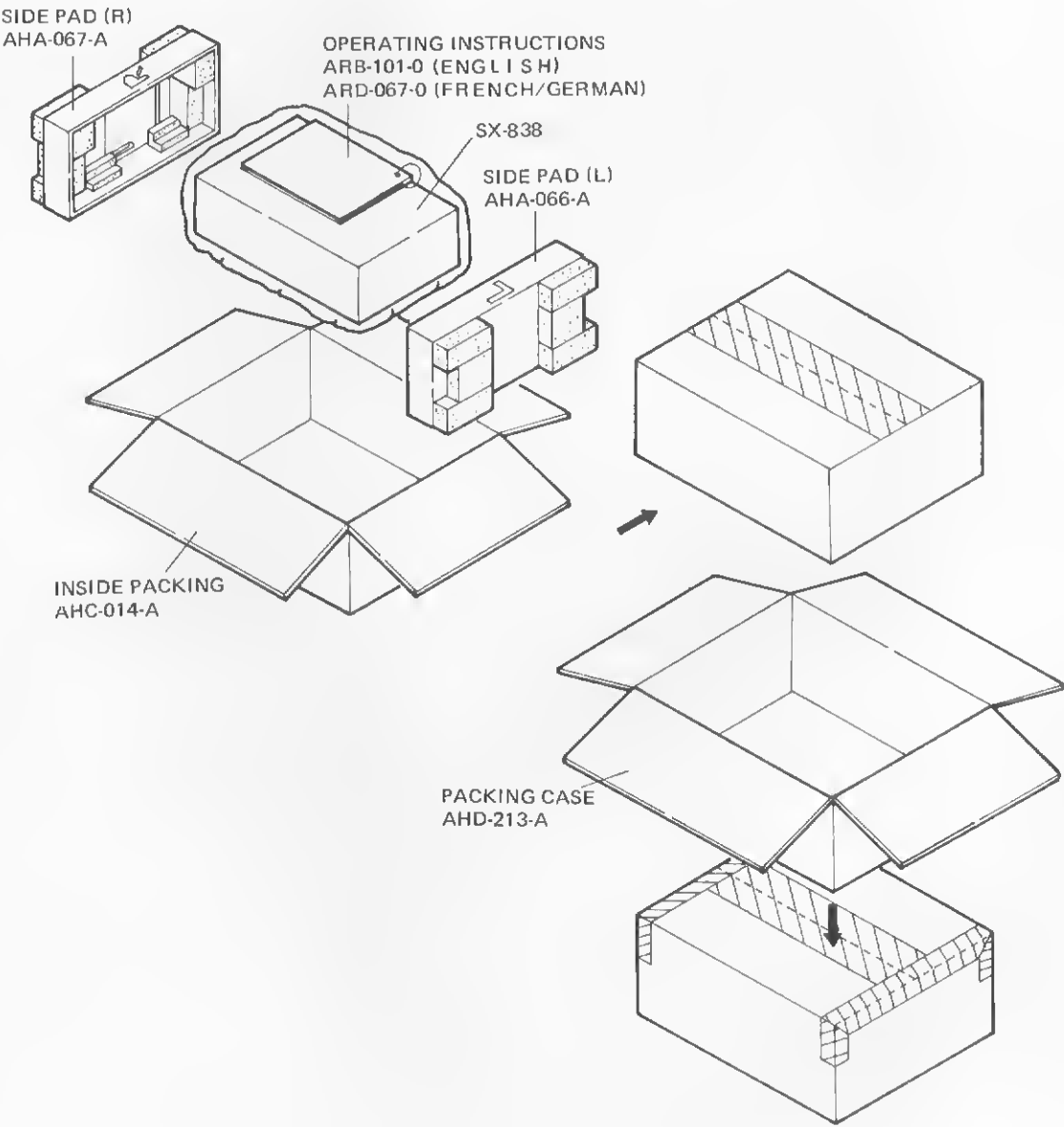
## 5. CIRCUIT DESCRIPTION

### Signal Path

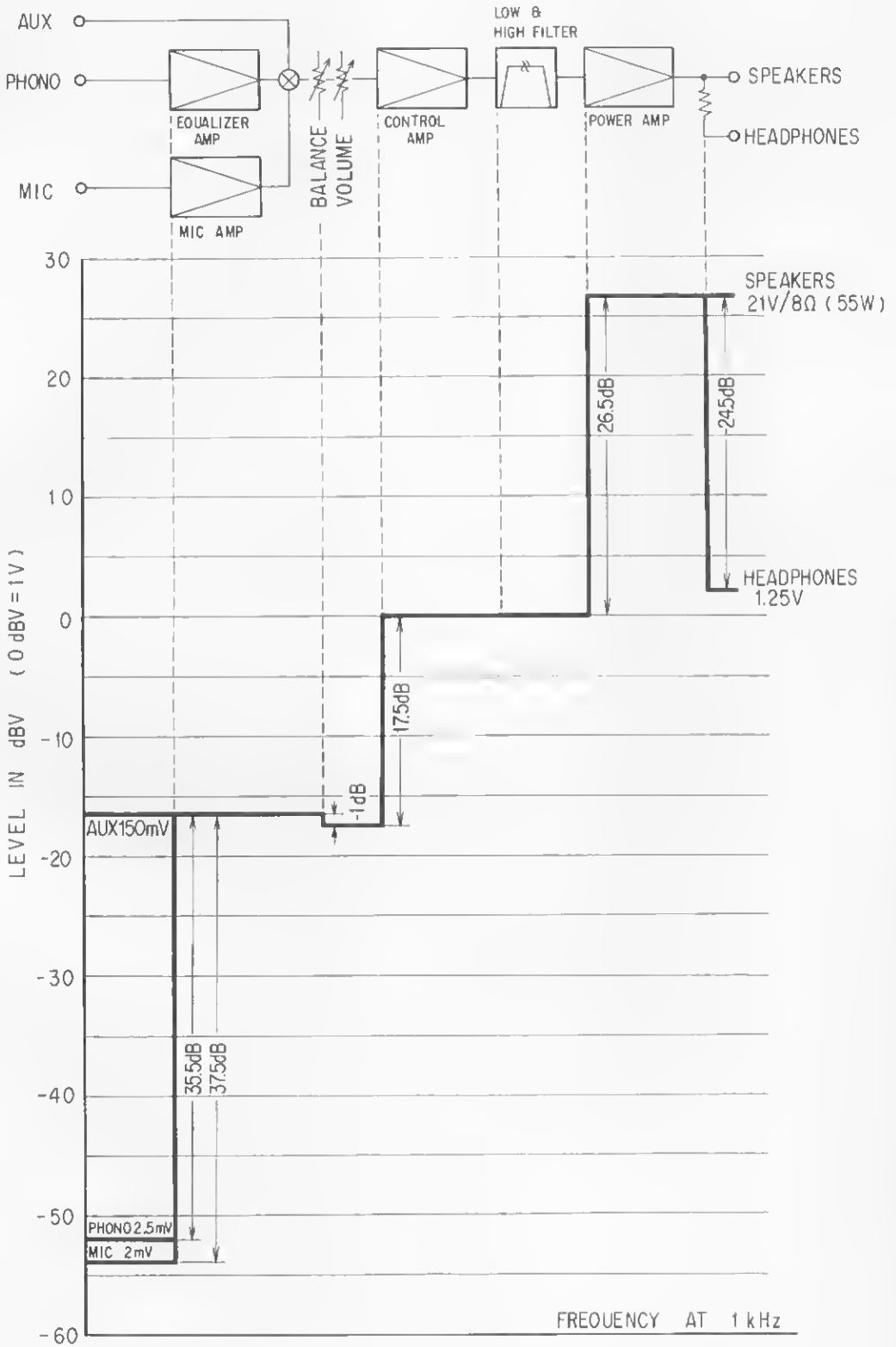
1. The FM broadcast signal waveform from the antenna is fed to the two dual-gate MOS field-effect transistor in the front end section for radio frequency amplification. This signal is converted into an intermediate frequency by the dual-gate MOS FET mixer stage in combination with the signal from the local oscillator.
2. The intermediate frequency signal, converted within the front end section, is fed to three ceramic filters and two ICs, where it is tuned, amplified, and detected, becoming a audio frequency (composite) signal.  
The composite signal following detection is fed to the 4CH MPX terminal jack and the multiplex decoder stage.
3. The multiplex decoder stage uses one IC for three functions: to demodulate the composite signal into the left and right channel stereo signals, to operate the automatic mode switching between stereo/mono, and to switch the stereo indicator lamp appropriately. The decoding system uses a phase locked loop (PLL) circuit, which assures continuous stable operation and excellent stereo separation with low susceptibility to external noise (such as car ignition noise) and ambient temperature changes.  
After decoding, the signal is fed to four transistors and one LC filter, where the residual carrier component (38kHz, 19kHz, and SCA) is rejected, and then to the audio amplifier section.
4. The FM muting circuit is an electronic switch incorporated into the IC, so that the demodulated circuit is switched off and on in the IC.
5. The AM tuner section employs one monolithic IC which functions as radio frequency amplifier, frequency converter; local oscillator, intermediate frequency amplifier, and detector. The output is a pure audio signal.
6. The signals which are applied to the PHONO 1 and 2 terminal jacks are selected by the FUNCTION switch before being fed to the first stage of the three-stage direct-coupled equalizer amplifier by which the signals are amplified.
7. The output from the equalizer amplifier, together with that from the AUX terminal jacks, the audio signal from the AM tuner, the audio signal from the FM tuner, and the amplified signal from MIC terminal jack; are all selected by the FUNCTION switch, and pass through the switch circuits for REC SELECTOR, TAPE MONITOR, DOLBY NR ADAPTOR, and the circuits for BALANCE and VOLUME controls, before being fed to the control amplifier.
8. The control amplifier has an extremely high input impedance, using an field-effect transistor. This greatly reduces the influence of the performance inherent in equipment connected externally.  
The output from this FET circuit is into the tone control circuit, and employed with turn over switches.
9. The control amplifier output is fed to the power amplifier after passing through the LOW FILTER, HIGH FILTER, and AUDIO MUTING circuits.  
The power amplifier is a differential amplifier of the first stage and pure complementary circuit design with balanced positive and negative power supply.
10. The power amplifier output is fed to the three push buttons which form the SPEAKER switch. This selects A, B, and C speaker system terminal connection.  
If all three speaker systems were to be connected simultaneously, the effective speaker impedance might be less than  $4\Omega$ . To guard against this possibility, when all three buttons are depressed together, all three systems are disconnected from the amplifier.
11. The protective circuit which guard against DC potentials at the power amplifier output junctions, against speaker complex load impedances less than  $4\Omega$ , and shorts across the speaker terminals. Their operation is such that, under the corresponding abnormal condition, a relay acts to separate the output junction and the output circuit. Further, these protective circuits are also help to mute the unwanted signal which immediately follows switching the POWER switch ON, and to immediately disconnect the output after switched OFF.



# 6. PACKING METHOD AND PART NUMBERS

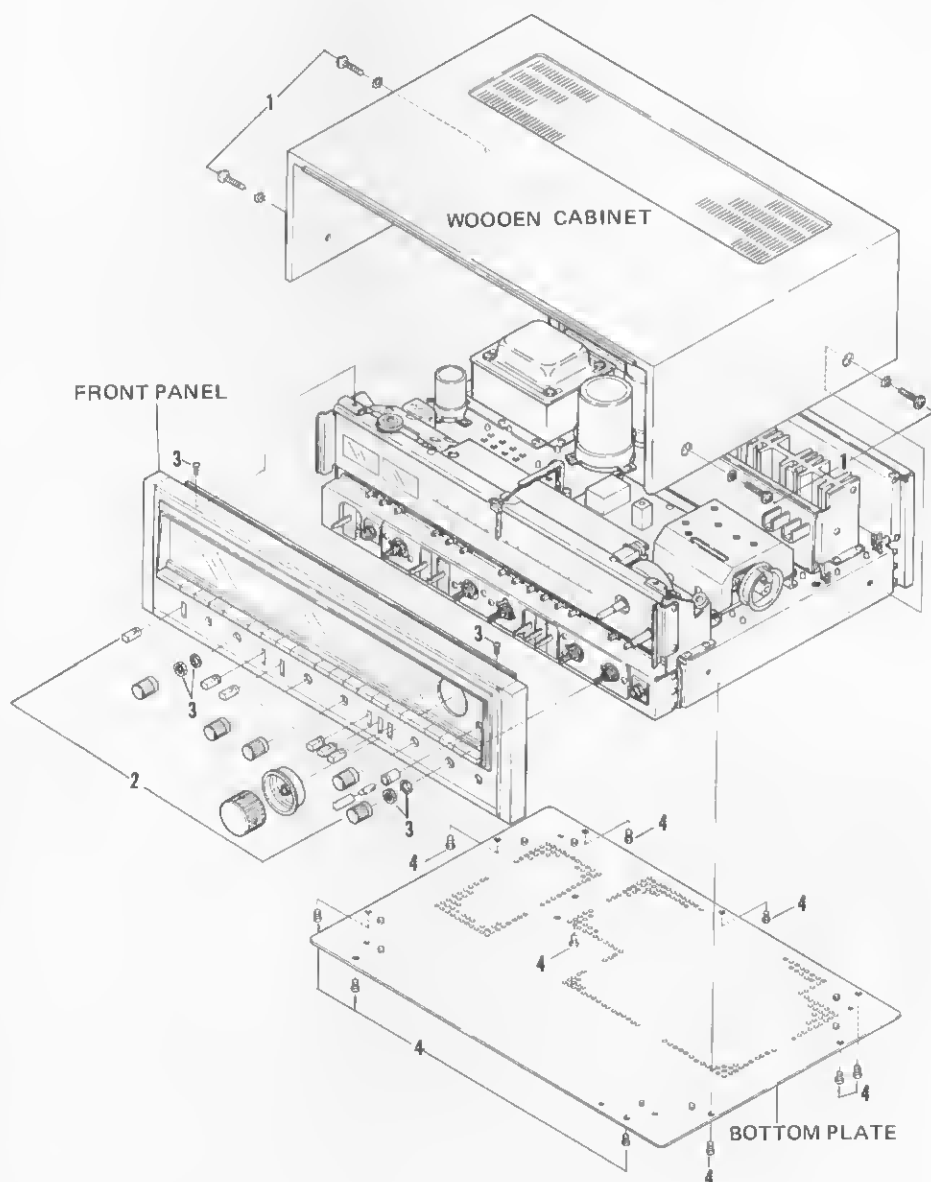


## 7. LEVEL DIAGRAM



## 8. DISASSEMBLY

1. To remove the wooden cabinet, first remove the two screws holding each side, then lift the back of the wooden cabinet upward.
2. Pull off all knobs.
3. Remove the two screws in the upper edge of the front panel, and remove two nuts and washers. Then pull the panel gently forward.
4. To remove the bottom panel, first remove the ten screws holding it in place.



## 9. PARTS AND P.C. BOARD LOCATIONS

### Top View

FERRITE LOOPSTICK ANTENNA  
ATB-026-0

FERRITE ANTENNA HOLOER ASSEMBLY  
AXB-001-A

KNOB (VOLUME, BALANCE, REC  
SELECTOR, TREBLE, BASS)  
AAB-06B-A

PHONO JACK-C (6 JACKS)  
AKB-016-0

TUNING SHAFT ASSEMBLY  
AXA-056-0

KNOB (TUNING)  
AAA-026-0

ANTENNA TERMINAL

TUNING PULLEY  
ASSEMBLY  
AXA-015-A

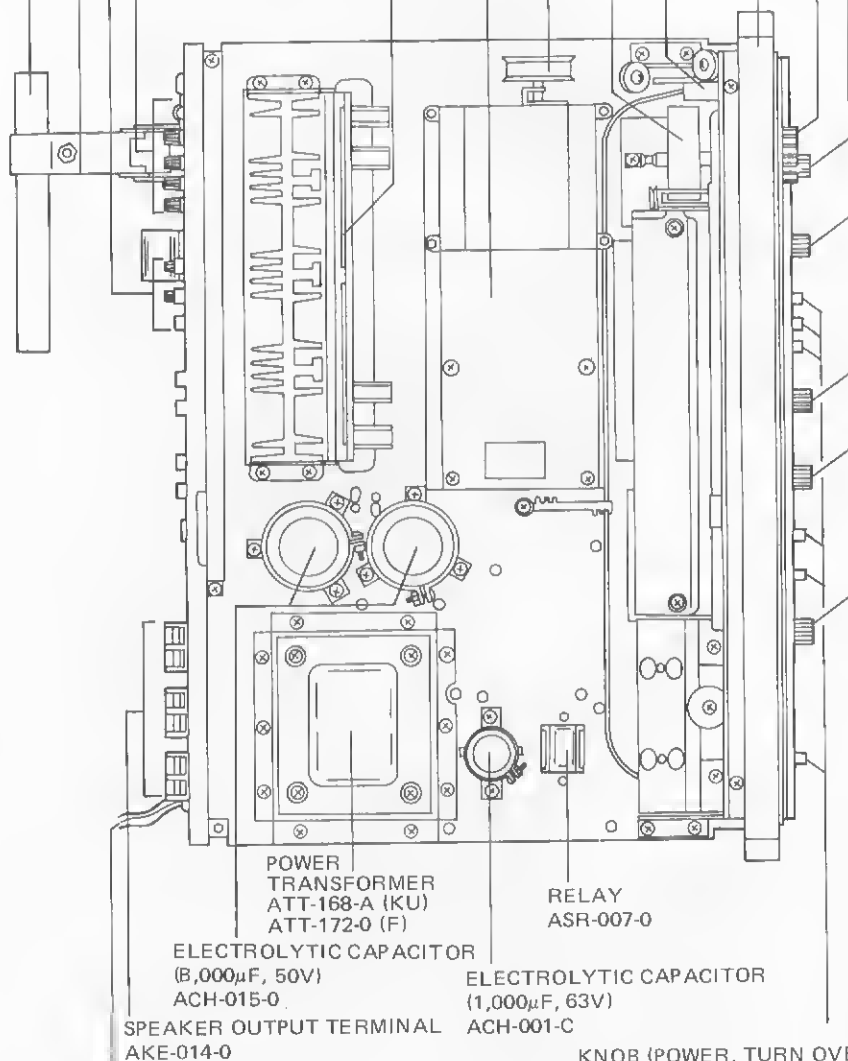
SWITCH CIRCUIT  
ASSEMBLY  
AWS-075-0

BOARD  
AKA-002-0

POWER AMPLIFIER  
ASSEMBLY  
AWH-031-0

TUNER  
ASSEMBLY  
AWE-041-A

FRONT PANEL  
ASSEMBLY  
ANB-262-B



POWER  
TRANSFORMER  
ATT-168-A (KU)  
ATT-172-0 (F)

RELAY  
ASR-007-0

ELECTROLYTIC CAPACITOR  
(8,000 $\mu$ F, 50V)  
ACH-015-0

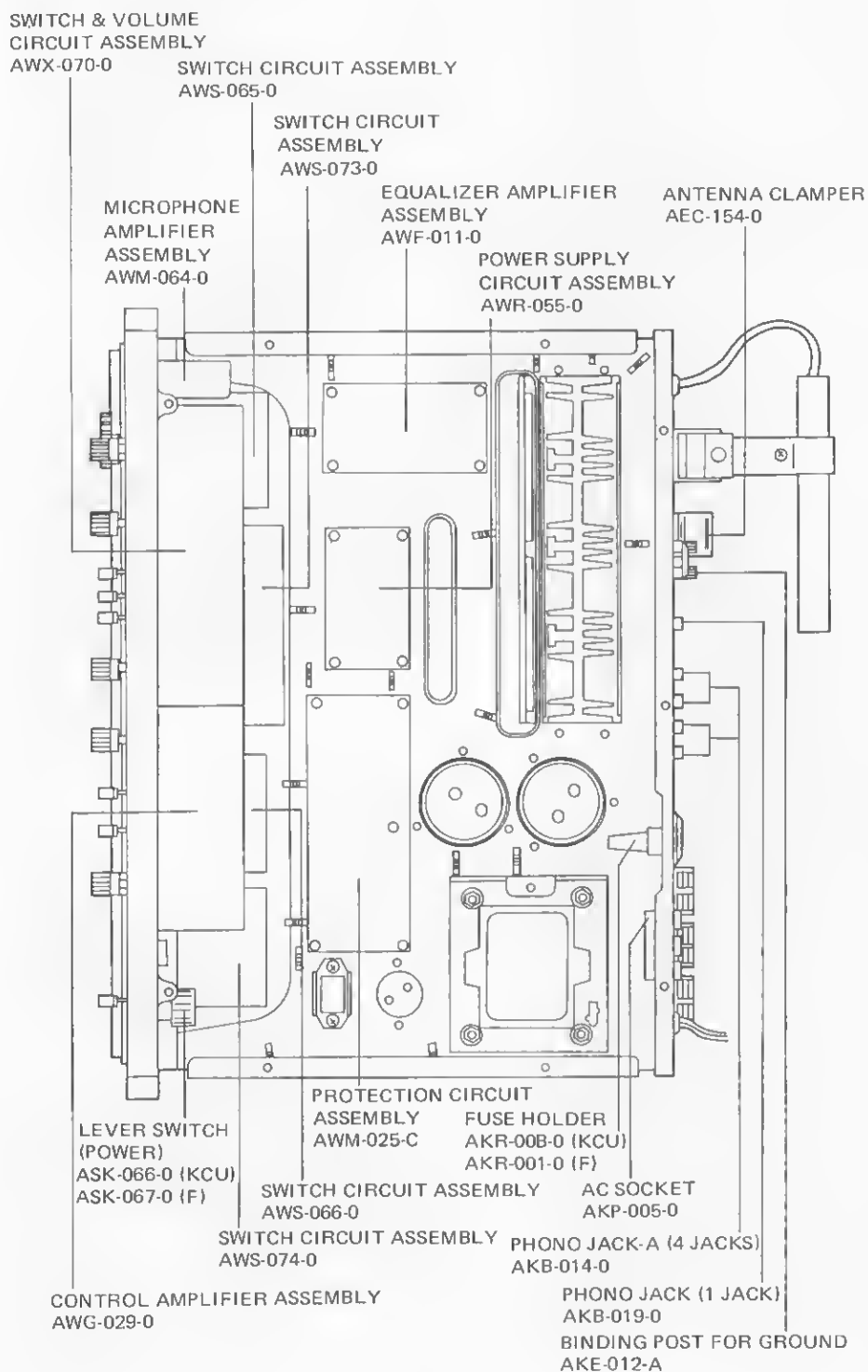
ELECTROLYTIC CAPACITOR  
(1,000 $\mu$ F, 63V)  
ACH-001-C

SPEAKER OUTPUT TERMINAL  
AKE-014-0

AC POWER CORO  
AOG-005-A (KCU)  
AOG-004-0 (F)

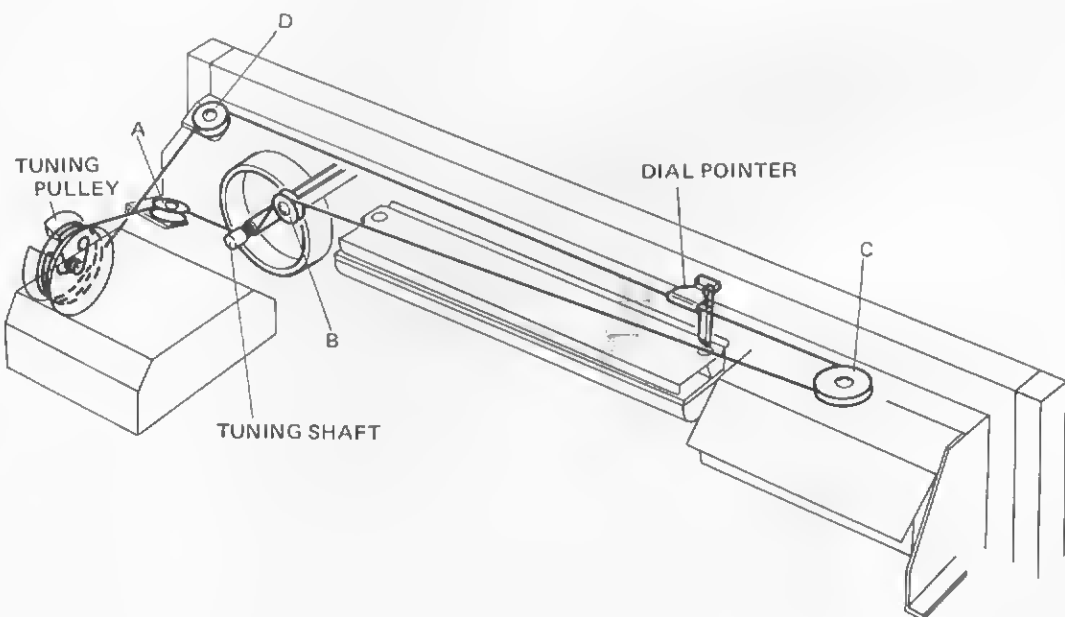
KNOB (POWER, TURN OVER,  
TAPE MONITOR, NR  
'AOAPTOR)  
AAO-040-0

Bottom View



## 10. DIAL CORD STRINGING

1. Turn the tuning capacitor so that its plates protrude as much as possible.
2. Tie one end of the string to the spring on the TUNING pulley (attached to the tuning capacitor).
3. Lead the string around pulley A, then wind it three turns around the TUNING shaft.
4. Lead the string around pulleys B, C and D then wind it 1-1/2 turns around the TUNING pulley.
5. Now tie the other end of the string to the spring on the TUNING pulley. Turn the TUNING shaft and check for proper function. Then trim the ends of the string.
6. Turn the TUNING shaft until the plates of the variable are all the way in. Move the pointer to the left-end starting point on the dial and fasten it to the string in that position.



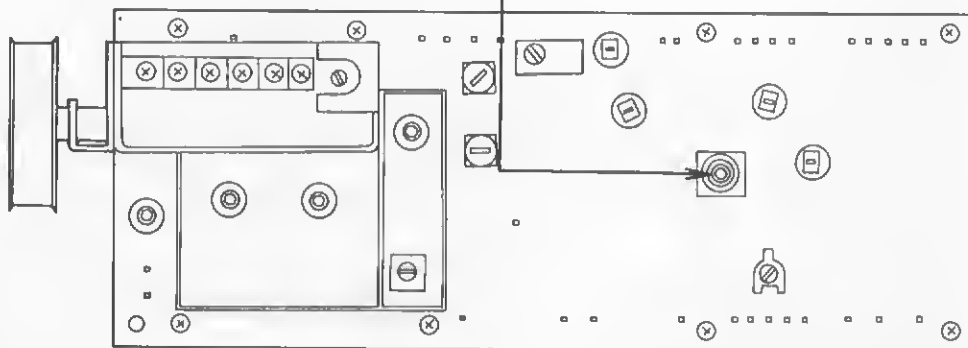
# 11. ALIGNMENT PROCEDURE

## 11.1 ENGLISH

### Aligning the FM Section

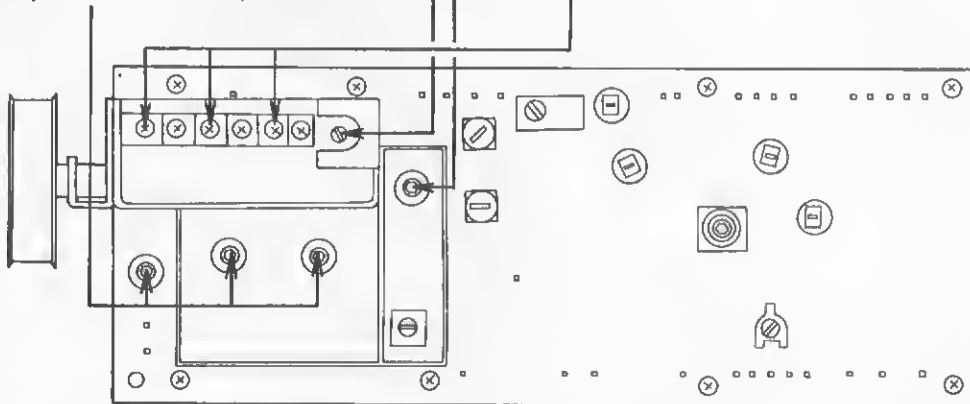
1. **SX-838 Control Settings**  
Set the controls (knob and switches) of the SX-838 as follows:  
POWER: ON  
FUNCTION: FM  
FM MUTING: OFF
2. **Connections between Test Equipment and the SX-838.**
  - The output from an FM signal generator should be connected to the 300Ω antenna terminals of the SX-838.
  - A distortion meter should be connected to the TAPE REC terminal jacks on the SX-838.
  - An AC millivolt meter should be connected to the TAPE REC terminal jacks on the SX-838 in parallel with the distortion meter.

3. Set both the FM signal generator and the SX-838 to indicate 98MHz.
4. Turn the FM signal generator output level down to minimum
5. Turn the lower core and adjust so that the TUNING meter needle is centered.
6. Increase the FM signal generator output to 60dB, modulated at 400Hz, with a deviation of  $\pm 75\text{kHz}$ .
7. Turn the upper core and adjust so that the distortion is at a minimum. Steps 4~above should be repeated several times in succession, until no further significant improvement is obtained.



TUNER ASSEMBLY (AWE-041)

8. Set the FM signal generator output level to 10dB, modulated at 400Hz, with a frequency deviation of  $\pm 75\text{kHz}$ .
9. Adjust for maximum output at 90MHz.
10. Adjust for maximum output at 106MHz.
11. Adjust for maximum output at 90MHz.
12. Adjust for maximum output at 106MHz. Steps 11~12 above should be repeated several times in succession, until no further significant improvement is obtained.



TUNER ASSEMBLY (AWE-041)

## Aligning the FM MPX Section

### NOTES:

This set of adjustments should not be carried out until the alignment of the FM section (1~12 above) has been completed: The multiplex signal generator should be connected to the external modulator terminals of the FM signal generator.

#### 1. SX-838 Control Settings

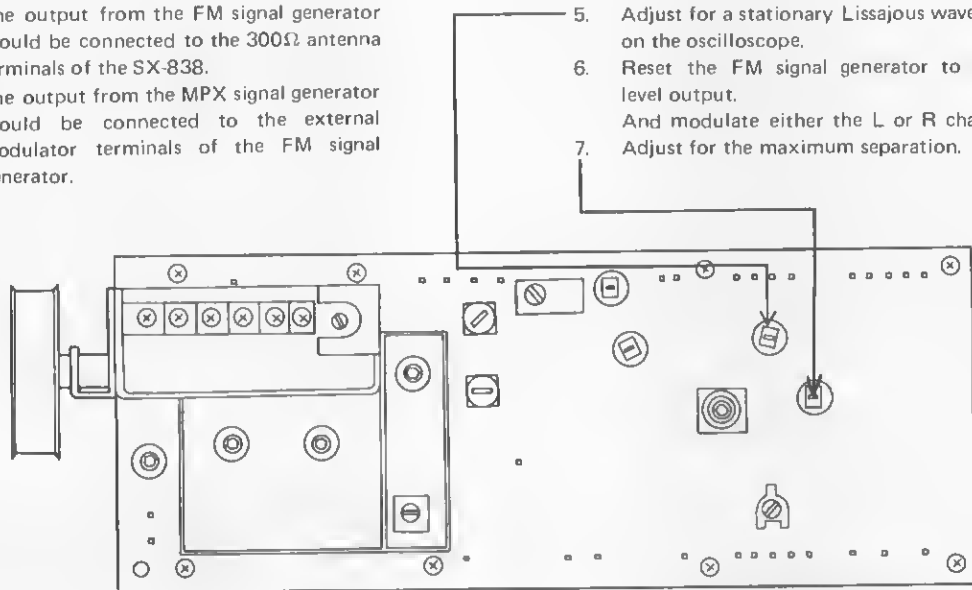
Set the controls (knob and switches) of the SX-838 as follows:

POWER: ON  
FUNCTION: FM  
FM MUTING: OFF

#### 2. Connections between the Test Equipment and the SX-838.

- The output from the FM signal generator should be connected to the  $300\Omega$  antenna terminals of the SX-838.
- The output from the MPX signal generator should be connected to the external modulator terminals of the FM signal generator.

- The oscilloscope X plates (horizontal inputs) should be connected to the PILOT OUT terminals on the MPX signal generator, and the Y plates (vertical inputs) to terminal number 18.
  - The AC millivolt meter should be connected to the TAPE REC terminals (with changeover possible from L to R channels).
3. Multiplex Signal Generator Modulation  
L + R (1kHz ): 67.5kHz deviation  
PILOT (19kHz): 7.5kHz deviation
  4. Set the FM signal generator output to minimum.
  5. Adjust for a stationary Lissajous waveform on the oscilloscope.
  6. Reset the FM signal generator to 60dB level output.  
And modulate either the L or R channel.
  7. Adjust for the maximum separation.

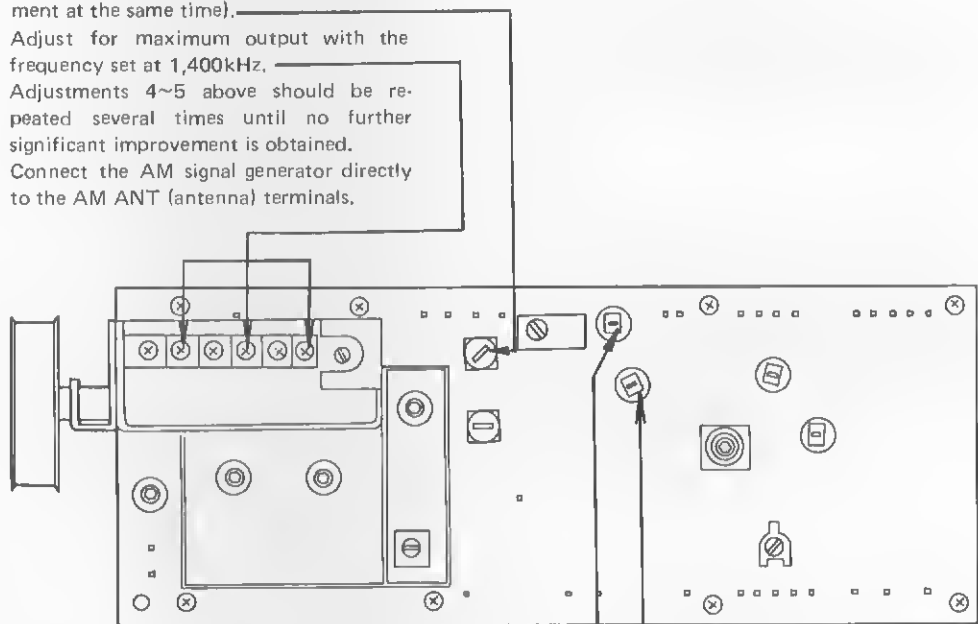


**TUNER ASSEMBLY (AWE-041)**



## Aligning the AM Section

1. **SX-838 Control Settings**  
Set the controls (knob and switch) of the SX-838 as follows:  
POWER: ON  
FUNCTION: AM
2. **Connections between Test Equipment and the SX-838**
  - Connect the AM signal generator to the AM antenna terminals (in series with a  $1k\Omega$  dummy resistor).
  - Connect the AC millivolt meter to the TAPE REC terminal jacks.
3. Set the AM signal generator to 30% modulation at 400Hz.
4. Set the AM signal generator output to 30dB at 600kHz.  
Adjust for maximum output (Carry out the ferrite loopstick antenna core adjustment at the same time).
5. Adjust for maximum output with the frequency set at 1,400kHz.  
Adjustments 4~5 above should be repeated several times until no further significant improvement is obtained.
6. Connect the AM signal generator directly to the AM ANT (antenna) terminals.

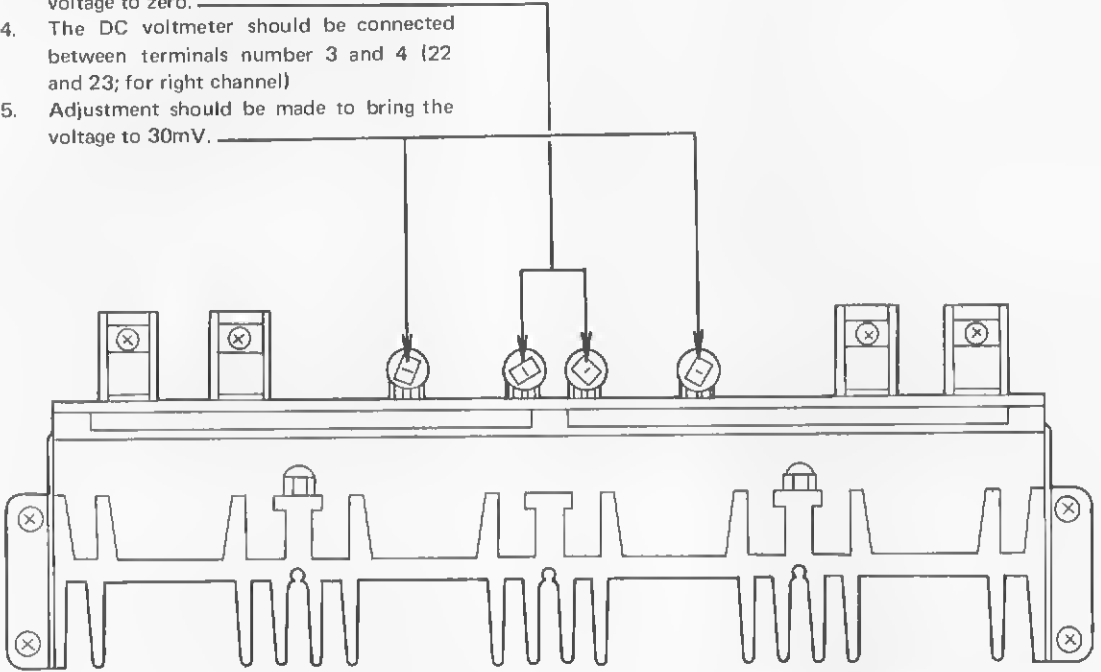


**TUNER ASSEMBLY (AWE-041)**

7. With a frequency of 1,400kHz and an AM signal generator output of 36dB, adjust for a low frequency output of 70mV.
8. With an AM signal generator output of 80dB, adjust for a low frequency output of 310mV.

## Aligning the Power Amplifier Section

1. Nothing should be connected to the input jacks of the SX-838, and an  $8\Omega$  dummy resistor should be connected across the speaker terminals.
2. A DC millivolt meter should be connected across between terminal number 5 and earth (20 and earth; for right channel)
3. Adjustment should be made to bring the voltage to zero.
4. The DC voltmeter should be connected between terminals number 3 and 4 (22 and 23; for right channel)
5. Adjustment should be made to bring the voltage to 30mV.



POWER AMPLIFIER ASSEMBLY (AWH-031)

# 12. EXPLODED VIEW AND PARTS LIST

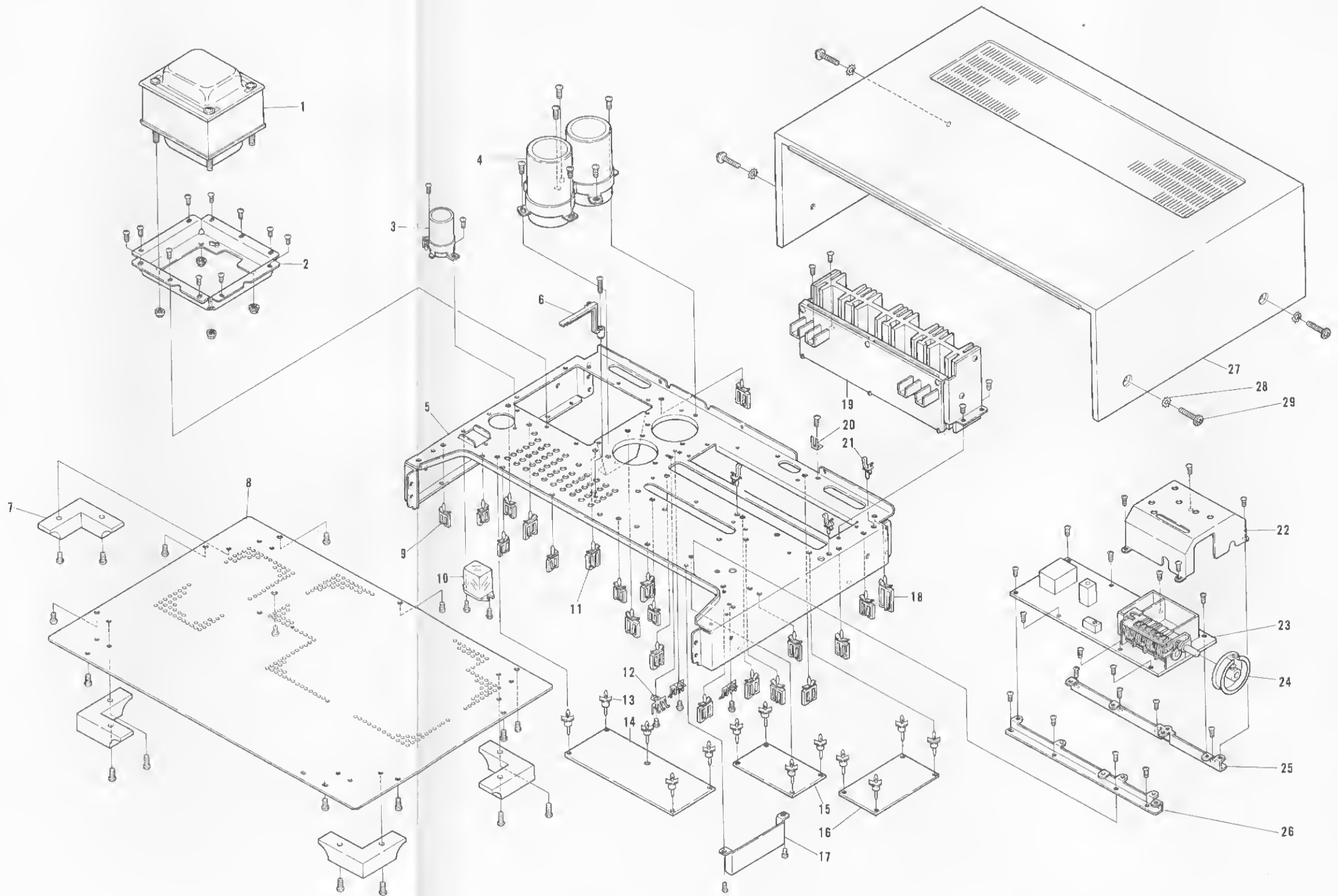
NOTE:  
Parts number is subject to change for the purpose of improvement with notice of a service bulletin.  
Service bulletin will be furnished whenever necessary and you are requested to amend parts number in this manual according to the instructions.

NOTICE: Any parts asterisked (\*) are subject to being not supplied.

## Parts List of Exploded View-1

Key No.	Description	Part No.	
1	Power transformer	ATT-168-A	KCU
	Power transformer	ATT-172-0	F
	Power transformer	ATT-181-0	GN
2*	Sub-chassis	ANF-235-A	
3	Electrolytic capacitor 1,000 $\mu$ F 63V	ACH-001-C	
4	Electrolytic capacitor 8,000 $\mu$ F 50V	ACH-015-0	
5*	Chassis	ANA-066-E	
6*	Wire supporter	AEC-084-C	
7	Foot	AEC-027-0	
8*	Bottom plate	ANE-057-B	
9*	Wire clip B	AEC-005-0	
10	Relay	ASR-007-0	
11*	Wire clip A	AEC-004-0	
12	Ground terminal strip	K13-047-0	
13*	P.C. board holder	AEB-019-0	
14	Protection circuit assembly	AWM-025-C	
15	Power supply circuit assembly	AWR-055-A	KCU, F
	Power supply circuit assembly	AWR-064-0	GN
16	Equalizer amplifier assembly	AWF-011-0	
17*	Shield plate	ANF-250-0	
18*	Wire clip	AEC-064-0	
19	Power amplifier assembly	AWH-031-A	
20	Ground terminal strip (2P)	K13-048-0	
21*	Wire clip C	AEC-007-0	
22*	Shield cover	ANF-240-A	
23	Tuner assembly	AWE-041-A	
24	Tuning pulley assembly	AXA-015-A	
25*	P.C. board-held metal (A)	ANF-237-A	
26*	P.C. board-held metal (B)	ANF-238-A	
27	Wooden cabinet	AMM-035-B	
28	Screw M4X26	ABA-011-A	
29	Washer	B21-011-0	

Exploded View-1

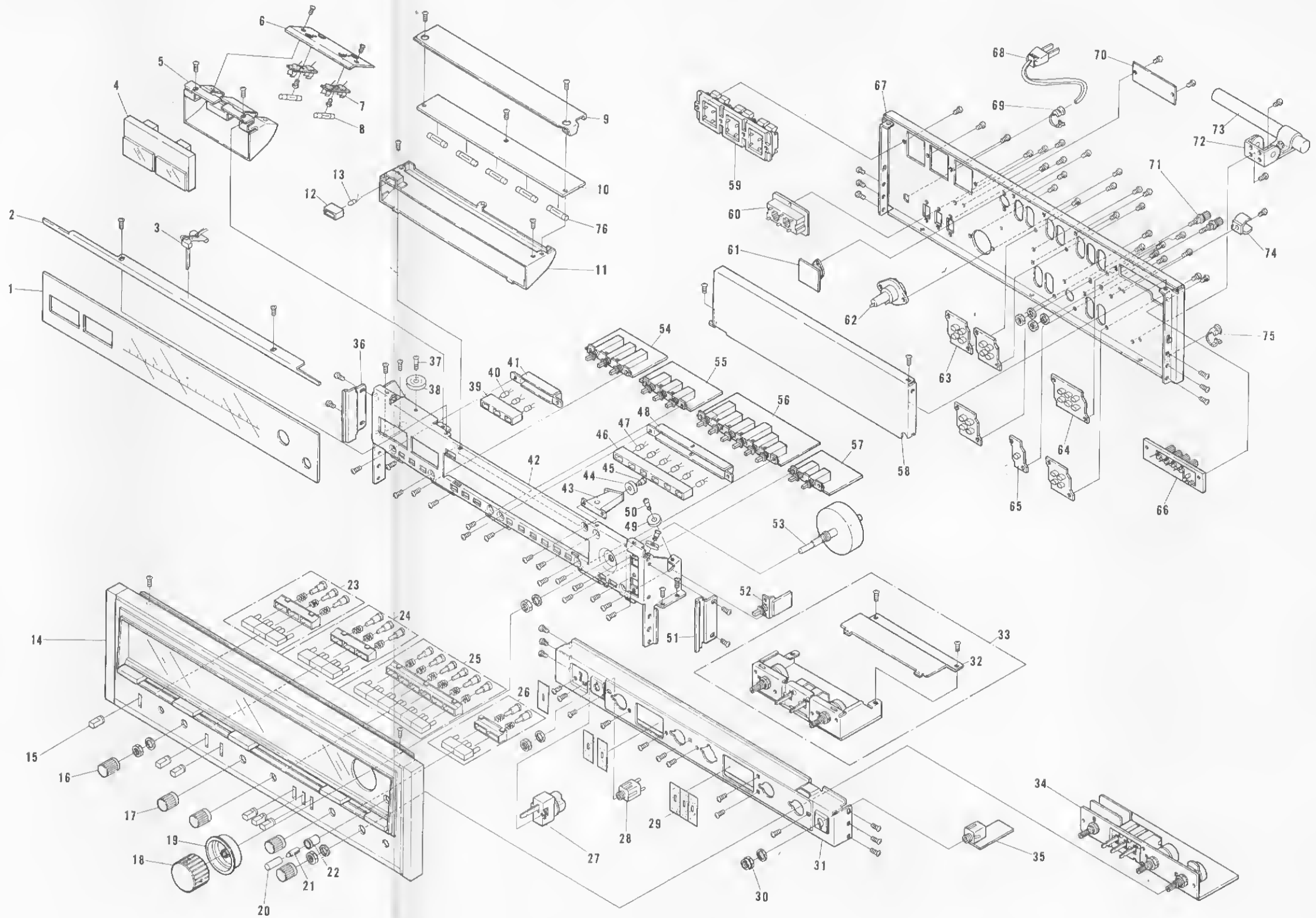


## Parts List of Exploded View-2

Key No.	Description	Part No.	
1	Dial scale	AAG-075-A	
2*	Dial scale-held metal	ANF-243-A	
3	Dial pointer assembly	AAF-031-A	
4	Meter (Signal & Tuning)	AAW-029-0	
5*	Lamp box	ANH-211-B	
6*	Lamp holder	ANG-097-0	
7	Pilot lamp socket	AKK-002-0	
8	Pilot lamp BV, 0.3A (meter)	AEL-015-0	
9*	P.C. board cover	ANG-100-0	
10	Lamp board assembly	AWX-069-0	
11*	Lamp box	ANH-210-A	
12	Rubber bracket	AEB-031-A	
13	Pilot lamp 6V, 30mA (Stereo indicator)	AEL-014-0	
14	Front panel assembly	ANB-262-8	
15	Knob (Power, Turn over, Tape monitor, NR adaptor)	AAD-040-0	
16	Knob (Bass)	AAB-068-A	
17	Knob (Treble, Volume, Balance, Rec selector)	AAB-068-A	
18	Knob (Tuning)	AAA-026-0	
19	Ornamental ring	AAC-034-0	
20	Knob (FM muting)	AAD-082-A	
21	Coupler (Knob-to-switch)	AAE-007-0	
22	Spacer	AEC-152-A	
23	Knob (SPKR A, B, C)	AAD-064-A	
24	Knob (Low cut, High cut, -20dB)	AAD-065-A	
25	Knob (Function)	AAD-066-A	
26	Knob (Mode, Loudness)	AAD-067-A	
27	Lever switch (Power)	ASK-066-0	KCU F GN
	Lever switch (Power)	ASK-067-0	
	Lever switch (Power)	ASK-068-0	
	Lever switch (Power)	ASK-068-0	
28	Phone jack (Headphone)	K72-026-0	
29	Shading plate	AED-018-0	
30	Nut (insulator)	B71-031-0	
31*	Sub-chassis	AND-074-B	
32*	Shield cover	ANF-234-0	
33	Control amplifier assembly	AWG-029-0	
34	Switch & volume circuit assembly	AWX-070-0	
35	Microphone amplifier assembly	AWM-064-0	
36*	Shading metal	ANF-249-0	
37*	Pulley shaft	M49-025-E	
38*	Pulley	AEC-153-0	
39	Rubber bracket	AEB-057-A	
40	Pilot lamp BV, 50mA (program indicator)	AEL-022-0	

Key No.	Description	Part No.	
41*	Lamp holder	ANG-103-0	
42*	Sub-panel	AND-073-B	
43*	Pulley-held metal	ANG-102-A	
44*	Pulley	AEC-101-0	
45*	Pulley shaft	M49-025-E	
46	Rubber bracket	AEB-057-A	
47	Pilot lamp 8V,50mA (program indicator)	AEL-023-0	
48*	Lamp holder	ANG-104-0	
49*	Pulley	AEC-101-0	
50*	Pulley shaft	M49-025-E	
51*	Shading metal	ANF-249-0	
52	Switch circuit assembly (FM muting)	AWS-075-0	
53	Tuning shaft assembly	AXA-056-0	
54	Switch circuit assembly (speakers)	AWS-074-0	
55	Switch circuit assembly (filter, AF muting)	AWS-066-0	
56	Switch circuit assembly(function)	AWS-073-0	
57	Switch circuit assembly(mode, loudness)	AWS-065-0	
58*	Shield cover	ANF-233-0	
59	Speaker output terminal	AKE-014-0	
60	AC socket	AKP-005-0	KCU, F
61	5P connector assembly	AWX-062-0	
62	Fuse holder	AKR-008-0	KCU
	Fuse holder	AKR-001-0	F
63	Phono jack-A (4 jacks)	AKB-014-0	
64	Phono jack-C (6 jacks)	AKB-016-0	
65	Phono jack (1 jack )	AKB-019-0	
66	Antenna terminal board	AKA-002-0	
67*	Rear panel	ANC-107-D	KCU
	Rear panel	ANC-112-B	F
	Rear Panel	ANC-114-0	GN
68	AC power cord	ADG-005-0	KCU
	AC power cord	ADG-004-0	F
69	AC cord grommet	AEC-079-0	KCU, F
	Connector (AC power)	AKP-008-0	GN
70*	Model name plate	AAL-186-0	KCU
	Model name plate	AAL-202-0	F
	Model name plate	AAL-188-0	GN
71	Binding post for ground	AKE-012-A	
72	Ferrite antenna holder assembly	AXB-001-A	
73	Ferrite loopstick antenna	ATB-026-0	
74	Antenna clamper	AEC-154-0	
75	AC cord grommet	AEC-079-0	

Exploded View-2



### 13. 1 CIRCUIT CONNECTION DIAGRAM AND MISCELLANEOUS PARTS





- CAPACITORS: IN  $\mu$ F UNLESS OTHERWISE NOTED p: pF
- RESISTORS: IN  $\Omega$ ,  $\frac{1}{2}$ W UNLESS OTHERWISE NOTED k: k $\Omega$ , M: M $\Omega$

## Miscellaneous Parts List

### CAPACITORS

Symbol	Description			Part No.	
C1	Electrolytic	8,000	50V	ACH-015-0	KCU F
C2	Electrolytic	8,000	50V	ACH-015-0	
C3	Electrolytic	1,000	63V	ACH-001-C	
C4	Ceramic	0.01	50V	CKDYF 103Z 50	
C6	Ceramic	0.01	250V	ACG-001-0	
C7	Ceramic	0.01	250V	ACG-003-0	
	Ceramic	0.01	250V	ACG-001-0	
C8	Mylar	0.0007	50V	CQMA 472J 50	
C9	Mylar	0.0047	50V	CQMA 472J 50	

### RESISTOR

Symbol	Description			Part No.	
R1	Carbon film	2.2M	$\frac{1}{2}$ W	RD $\frac{1}{2}$ PS 225J	KCU

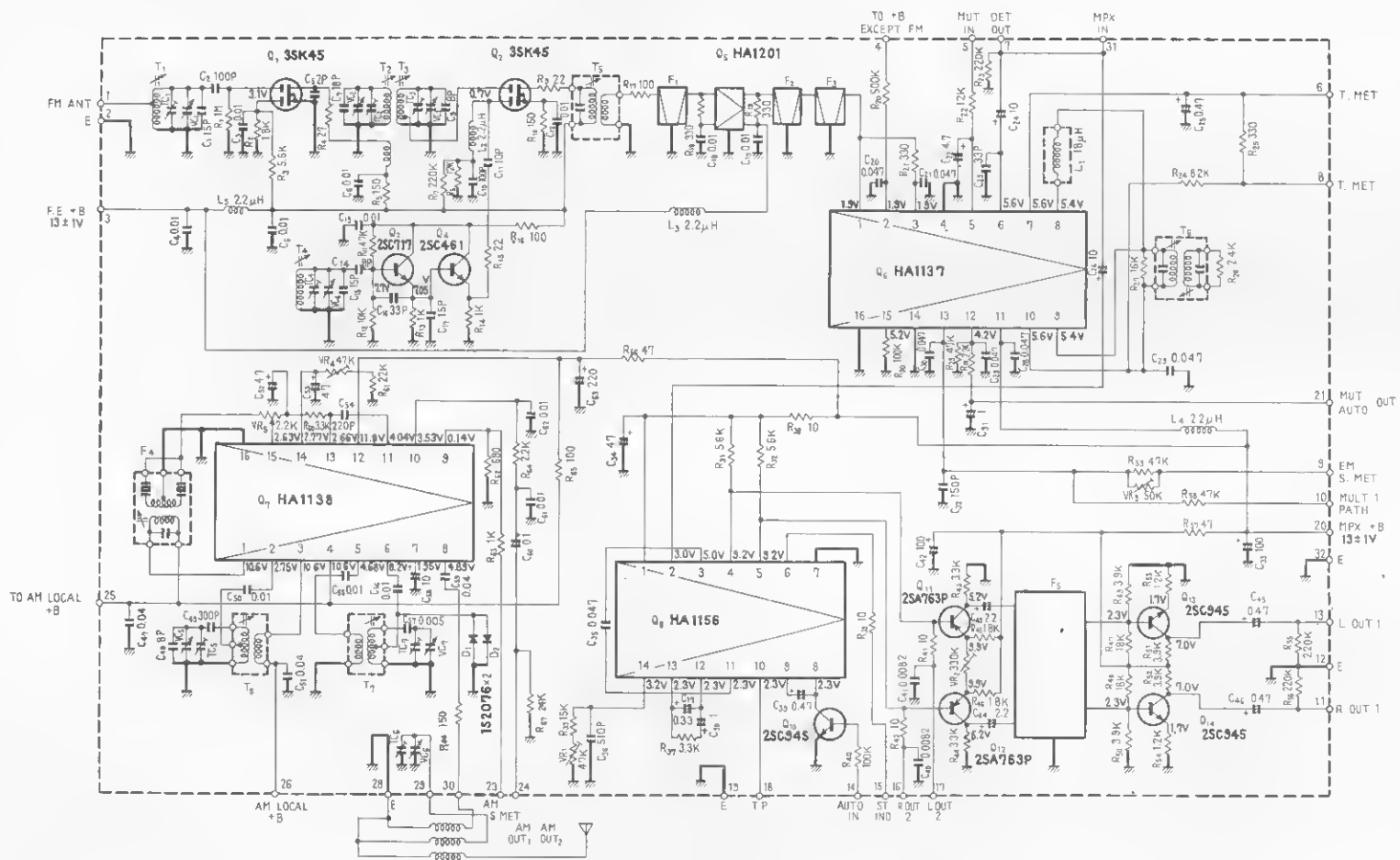
### SWITCHES

Symbol	Description			Part No.	
S1	Lever switch (Power)			ASK-066-0	KCU
	Lever switch (Power)			ASK-067-0	F
S2	Relay			ASR-007-0	KCU
S3	Fuse holder			AKR-008-0	KCU
S4	Slide switch			ASH-008-0	F

### OTHERS

Symbol	Description			Part No.	
	Tuner assembly			AWE-041-A	
	Equalizer amplifier assembly			AWF-011-0	
	Microphone amplifier assembly			AWM-064-0	
	Control amplifier assembly			AWG-029-0	
	Power amplifier assembly			AWH-031-A	
	Protection circuit assembly			AWM-025-C	
	Power supply circuit assembly			AWR-055-A	
	Switch & VR assembly			AWX-070-0	
	Switch circuit assembly (function)			AWS-073-0	
	Switch circuit assembly (FM muting)			AWS-075-0	
	Switch circuit assembly (mode, loudness)			AWS-065-0	
	Switch circuit assembly (filter, AF muting)			AWS-066-0	
	Switch circuit assembly (speakers)			AWS-074-0	
	Lamp board assembly			AWX-069-0	
	5P connector assembly			AWX-062-0	
	Wooden cabinet assembly			AMM-035-B	
	Phono jack - C (6 jacks)			AKB-016-0	
	Phono jack - A (4 jacks)			AKB-014-0	
	Phono jack (1 jack)			AKB-019-0	
	Antenna terminal board			AKA-002-0	

Symbol	Description	Part No.	
	Binding post for ground	AKE-012-A	
	Power transformer	ATT-168-A	KCU
	Power transformer	ATT-172-0	F
	Ferrite loopstick antenna	ATB-026-0	
	Balun	T22-025-A	
	Pilot lamp 8V, 0.3A (dial scale)	E22-032-0	
	Pilot lamp 8V, 0.3A (meter)	AEL-015-0	
	Pilot lamp 8V, 50mA (position)	AEL-022-0	
	Pilot lamp 8V, 50mA (position)	AEL-024-0	
	Fuse 4A (AC power)	AEK-100-0	KCU
	Fuse 3A (protection)	AEK-101-0	
	Fuse 1A (protection)	AEK-106-0	
	Fuse 2A (AC power)	AEK-103-0	F
	Fuse 4A (protection)	AEK-202-0	KCU
	AC socket	AKP-005-0	
	Speaker output terminal	AKE-014-0	
	Phone jack (Headphone)	K72-026-0	
	Jumper plug	AKM-004-A	
	Fuse holder (AC power)	AKR-001-0	F
	Pilot lamp socket	AKK-002-0	
	AC power cord	ADG-004-0	F
	AC power cord	ADG-005-0	KCU
	FM antenna	ADH-002-0	
	Operating instructions	ARB-101-0	
	Packing case	ARD-213-A	
	Side pad (L)	AHA-066-A	
	Side pad (R)	AHA-067-A	
	Inside packing	AHC-014-A	



2SA725

2SA763P  
2SC945

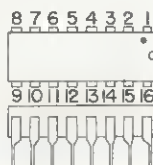
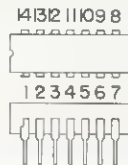
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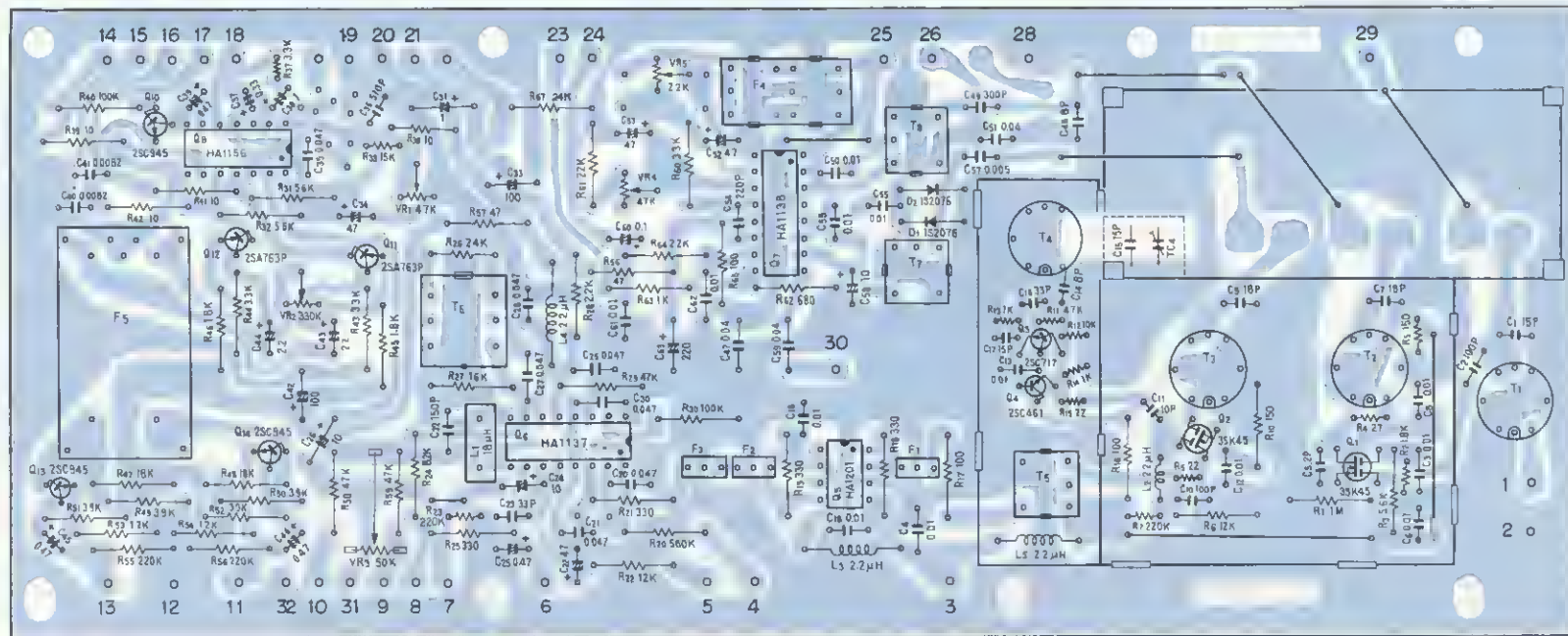
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2SC461  
2SC717

3SK45



## Foil Side (AWE-041-A)



## Parts List of Tuner Assembly (AWE-041-A)

## RESISTORS AND POTENTIOMETERS

Symbol	Description		Part No.
R1	Carbon film	1M	RD%PS 105J
R2	Carbon film	1.8k	RD%VS 182J
R3	Carbon film	5.6k	RD%PS 562J
R4	Carbon film	27	RD%VS 270J
R5	Carbon film	150	RD%VS 151J
R6	Carbon film	12k	RD%PS 123J
R7	Carbon film	220k	RD%VS 224J
R9	Carbon film	22	RD%VS 220J
R10	Carbon film	150	RD%PS 151J
R11	Carbon film	4.7k	RD%VS 472J
R12	Carbon film	10k	RD%VS 103J
R13	Carbon film	1k	RD%VS 102J
R14	Carbon film	1k	RD%VS 102J
R15	Carbon film	22	RD%VS 220J
R16	Carbon film	100	RD%PS 101J
R17	Carbon film	100	RD%PS 101J
R18	Carbon film	330	RD%PS 331J
R19	Carbon film	330	RD%PS 331J
R20	Carbon film	560k	RD%PS 564J
R21	Carbon film	330	RD%PS 331J
R22	Carbon film	12k	RD%PS 123J
R23	Carbon film	220k	RD%VS 224J
R24	Carbon film	10k	RD%PS 103J
R25	Carbon film	330	RD%PS 331J
R26	Carbon film	2.4k	RD%VS 242J
R27	Carbon film	16k	RD%PS 163J
R28	Carbon film	2.2k	RD%PS 222J
R29	Carbon film	47k	RD%PS 473J
R30	Carbon film	100k	RD%PS 104J
R31	Carbon film	5.6k	RD%PS 562J
R32	Carbon film	5.6k	RD%PS 562J
R33	Carbon film	15k	RD%VS 153J
R36	Carbon film	150	RD%PS 151J
R37	Carbon film	3.3k	RD%VS 332J
R38	Carbon film	10	RD%VS 100J
R39	Carbon film	10	RD%PS 100J
R40	Carbon film	100k	RD%PS 104J
R41	Carbon film	10	RD%PS 100J
R42	Carbon film	10	RD%PS 100J
R43	Carbon film	3.3k	RD%PS 332J
R44	Carbon film	3.3k	RD%PS 332J
R45	Carbon film	1.8k	RD%PS 182J
R46	Carbon film	1.8k	RD%PS 182J
R47	Carbon film	18k	RD%PS 183J
R48	Carbon film	18k	RD%PS 183J
R49	Carbon film	3.9k	RD%PS 392J

Continued on the Next Page

Symbol	Description			Part No.	
R50	Carbon film	3.9k		RD%PS 392J	
R51	Carbon film	3.9k		RD%PS 392J	
R52	Carbon film	3.9k		RD%PS 392J	
R53	Carbon film	1.2k		RD%PS 122J	
R54	Carbon film	1.2k		RD%PS 122J	
R55	Carbon film	220k		RD%PS 224J	
R56	Carbon film	220k		RD%PS 224J	
R57	Carbon film	47		RD%PS 470J	
R58	Carbon film	47k		RD%PS 473J	
R59	Carbon film	47k		RD%PS 473J	
R60	Carbon film	3.3k		RD%PS 332J	
R61	Carbon film	22k		RD%PS 223J	
R62	Carbon film	680		RD%PS 681J	
R63	Carbon film	1k		RD%PS 102J	
R64	Carbon film	2.2k		RD%PS 222J	
R65	Carbon film	100		RD%PS 101J	
R66	Carbon film	47		RD%PS 470J	
R67	Carbon film	24k		RD%PS 243J	
VR1	Variable resistor, semi-fixed	4.7k-8		C92-051-0	
VR2	Variable resistor, semi-fixed	330k-B		ACP-042-0	
VR3	Variable resistor, semi-fixed	50k-8		ACP-043-0	
VR4	Variable resistor, semi-fixed	47k-8		C92-048-0	
VR5	Variable resistor, semi-fixed	2.2k-8		ACP-001-0	

## CAPACITORS

Symbol	Description			Part No.	
VC	Tuning Capacitor			ACK-006-0	
TC4	Ceramic Trimmer			C43-007-A	
C1	Ceramic	15p	50V	CCDSH 150K 50	
C2	Ceramic	100p	50V	CCDSL 101K 50	
C3	Ceramic	0.01	50V	CKDYF 103Z 50	
C4	Ceramic	0.01	50V	CKDYF 103Z 50	
C5	Ceramic	2p	50V	CCDSL 020C 50	
C6	Ceramic	0.01	50V	CKDYF 103Z 50	
C7	Ceramic	18p	50V	CCDSH 180K 50	
C8	Ceramic	0.01	50V	CKDYF 103Z 50	
C9	Ceramic	18p	50V	CCDSH 180K 50	
C10	Ceramic	100p	50V	CCDSL 101K 50	
C11	Ceramic	10p	50V	CCDSL 100F 50	
C12	Ceramic	0.01	50V	CKDYF 103Z 50	
C13	Ceramic	0.01	50V	CKDY8 103K 50	
C14	Ceramic	8p	50V	CCDLH 080F 50	
C15	Ceramic	15p	50V	CCDLH 150K 50	

Symbol	Description			Part No.
C16	Ceramic	33p	50V	CCDCH 330K 50
C17	Ceramic	15p	50V	CCDCH 150K 50
C18	Ceramic	0.01	50V	CKDYF 103Z 50
C19	Ceramic	0.01	50V	CKDYF 103Z 50
C20	Ceramic	0.047	25V	CKDBC 473Z 25
C21	Ceramic	0.047	25V	CKDBC 473Z 25
C22	Electrolytic	4.7	25V	CEA 4R7P 25
C23	Ceramic	33p	50V	CCDSL 330K 50
C24	Electrolytic	10	16V	CEA 100P 16
C25	Electrolytic	0.47	50V	CEA R47P 50
C26	Electrolytic	10	16V	CEA 100P 16
C27	Ceramic	0.047	25V	CKDBC 473Z 25
C28	Ceramic	0.047	25V	CKDBC 473Z 25
C29	Ceramic	0.047	25V	CKDBC 473Z 25
C30	Ceramic	0.047	25V	CKDBC 473Z 25
C31	Electrolytic	1	50V	CEA 010P 50
C32	Ceramic	150p	50V	CCDSL 151K 50
C33	Electrolytic	100	16V	CEA 101P 16
C34	Electrolytic	47	16V	CEA 470P 16
C35	Mylar	0.047	50V	CQMA 473K 50
C36	Styrol	510p	50V	CQSH 511J 50
C37	Electrolytic	0.33	25V	CSSA R33M 25
C38	Electrolytic	1	10V	CSSA 010M 10
C39	Electrolytic	0.47	25V	CSSA R47M 25
C40	Mylar	0.0082	50V	CQMA 822J 50
C41	Mylar	0.0082	50V	CQMA 822J 50
C42	Electrolytic	100	16V	CEA 101P 16
C43	Electrolytic	2.2	25V	CEA 2R2P 25
C44	Electrolytic	2.2	25V	CEA 2R2P 25
C45	Electrolytic	0.47	50V	CEA R47P 50
C46	Electrolytic	0.47	50V	CEA R47P 50
C47	Ceramic	0.04	50V	CKDYF 403Z 50
C48	Ceramic	8p	50V	CCDXL 080F 50
C49	Styrol	300p	50V	CQSA 301J 50
C50	Mylar	0.01	50V	CQMA 103K 50
C51	Ceramic	0.04	50V	CKDYF 403Z 50
C52	Electrolytic	4.7	25V	CEA 4R7P 25
C53	Electrolytic	47	6V	CEA 470P 6
C54	Ceramic	220p	50V	CCDSL 221K 50
C55	Ceramic	0.01	50V	CKDYF 103Z 50
C56	Ceramic	0.01	50V	CKDYF 103Z 50
C57	Ceramic	0.005	50V	CKDYF 502Z 50
C58	Electrolytic	10	16V	CEA 100P 16
C59	Ceramic	0.04	50V	CKDYF 403Z 50
C60	Electrolytic	0.1	25V	CSSA 0R1M 25
C61	Ceramic	0.01	50V	CKDYB 103K 50
C62	Ceramic	0.01	50V	CKDYB 103K 50
C63	Electrolytic	220	16V	CEA 221P 16
C64	Ceramic	0.005	50V	CKDYF 502Z 50

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**SEMICONDUCTORS**

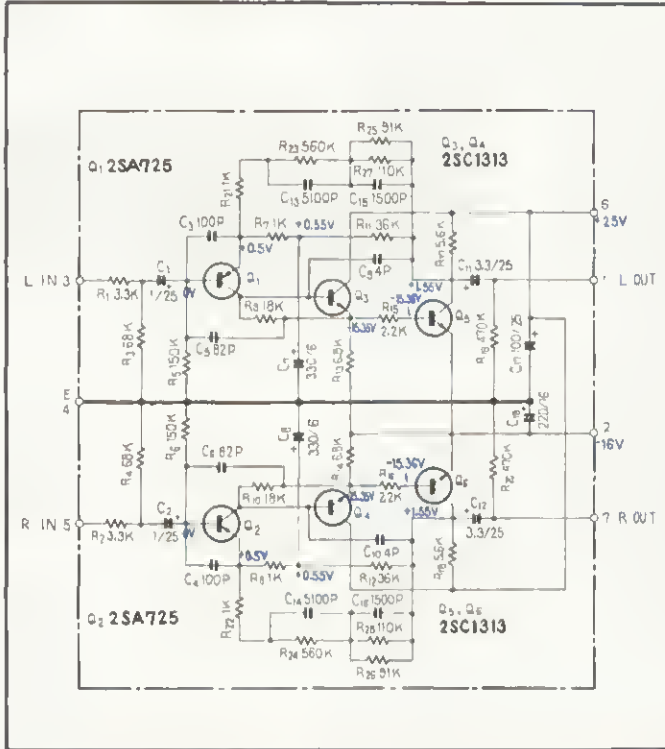
Symbol	Description		Part No.	
Q1	FET	3SK45-B		
Q2	FET	3SK45-B		
Q3	Transistor	2SC717		
Q4	Transistor	2SC461-B		
Q5	IC	HA1201		
Q6	IC	HA1137		
Q7	IC	HA1138		
Q8	IC	HA1156		
Q10	Transistor	2SC945-Q, R or S		
Q11	Transistor	2SA763P-6 or 5 (2SA725-F or G)		
Q12	Transistor	2SA763P-6 or 5 (2SA725-F or G)		
Q13	Transistor	2SC945-Q, R or S		
Q14	Transistor	2SC945-Q, R or S		
D1	Diode	1S2076		
D2	Diode	1S2076		

**COILS, FILTERS AND TRANSFORMERS**

Symbol	Description		Part No.	
T1	FM antenna coil		ATC-021-0	
T2	FM RF coil		ATC-015-0	
T3	FM RF coil		ATC-016-0	
T4	FM QSC coil		ATC-022-0	
T5	FM matching transformer		ATE-008-0	
T6	FM IF transformer		T73-035-A	
T7	AM RF coil		ATB-014-0	
T8	AM OSC coil		ATB-013-0	
F1	FM ceramic filter		ATF-013-B	
F2	FM ceramic filter		ATF-013-B	
F3	FM ceramic filter		ATF-013-B	
F4	AM ceramic filter		ATF-009-0	
F5	Low pass filter		ATF-019-0	
L1	Choke coil		ATH-007-0	
L2	RF choke coil		T24-028-A	
L3	RF choke coil		T24-028-A	
L4	RF choke coil		T24-028-A	
L5	RF choke coil		T24-028-A	



### 13. 3 EQUALIZER AMPLIFIER ASSEMBLY (AWF-011-0)



2SA725  
2SC1313



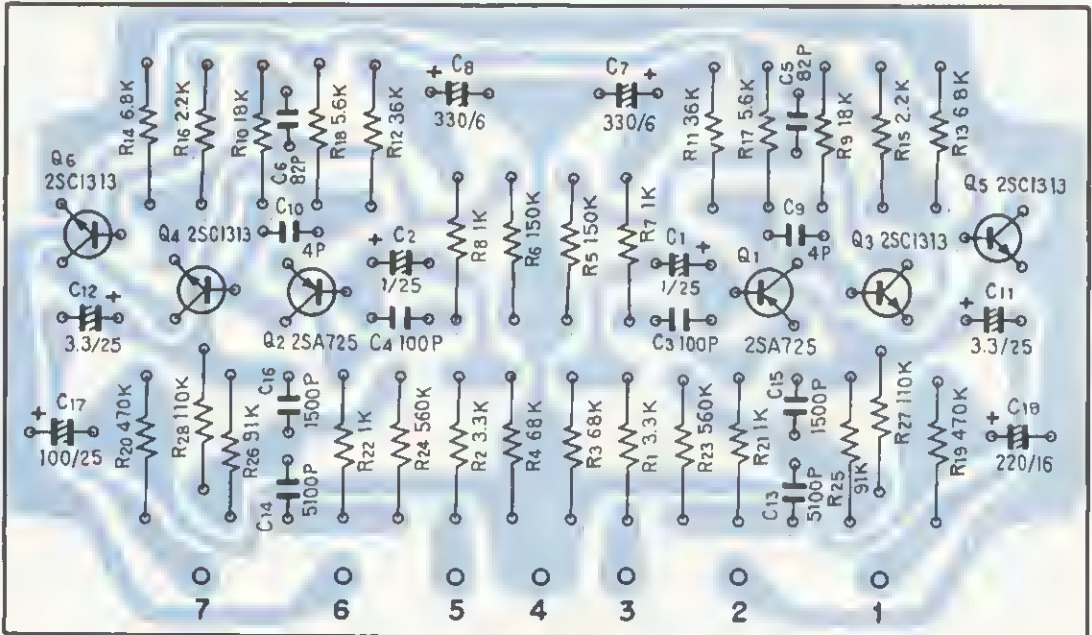
2SC1345



2SA763P



### Foil Side (AWF-011-0)



Parts List of Equalizer Amplifier Assembly

RESISTORS

Symbol	Description		Part No.	
R1	Carbon film	3.3k	RD¼PS 332J	
R2	Carbon film	3.3k	RD¼PS 332J	
R3	Carbon film	68k	RD¼PS 683J	
R4	Carbon film	68k	RD¼PS 683J	
R5	Carbon film	150k	RD¼PS 154J	
R6	Carbon film	150k	RD¼PS 154J	
R7	Carbon film	1k	RD¼PS 102J	
R8	Carbon film	1k	RD¼PS 102J	
R9	Carbon film	18k	RD¼PS 183J	
R10	Carbon film	18k	RD¼PS 183J	
R11	Carbon film	36k	RD¼PS 363J	
R12	Carbon film	36k	RD¼PS 363J	
R13	Carbon film	6.8k	RD¼PS 682J	
R14	Carbon film	6.8k	RD¼PS 682J	
R15	Carbon film	2.2k	RD¼PS 222J	
R16	Carbon film	2.2k	RD¼PS 222J	
R17	Carbon film	5.6k	RD¼PS 562J	
R18	Carbon film	5.6k	RD¼PS 562J	
R19	Carbon film	470k	RD¼PS 474J NL	
R20	Carbon film	470k	RD¼PS 474J NL	
R21	Carbon film	1k	RD¼PS 102J	
R22	Carbon film	1k	RD¼PS 102J	
R23	Carbon film	560k	RD¼PS 564J NL	
R24	Carbon film	560k	RD¼PS 564J NL	
R25	Carbon film	91k	RD¼PS 913J	
R26	Carbon film	91k	RD¼PS 913J	
R27	Carbon film	110k	RD¼PS 114J	
R28	Carbon film	110k	RD¼PS 114J	

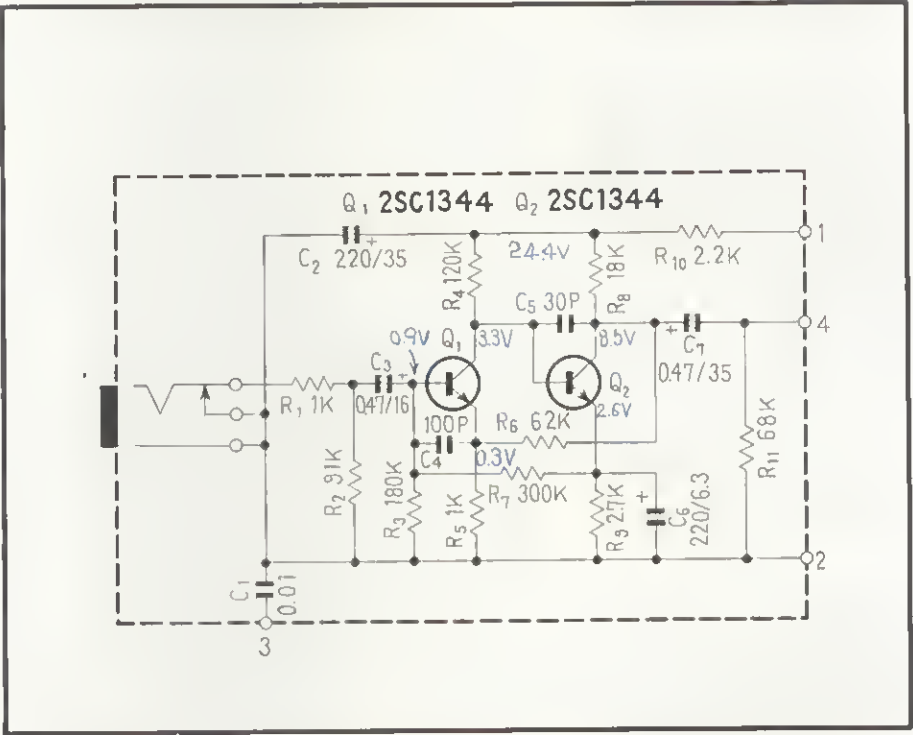
SEMICONDUCTORS

Symbol	Description		Part No.	
Q1	Transistor	2SA725-F or G (2SA763P-5 or 6)		
Q2	Transistor	2SA725-F or G (2SA763P-5 or 6)		
Q3	Transistor	2SC1313-G or F (2SC1345-E or D)		
Q4	Transistor	2SC1313-G or F (2SC1345-E or D)		
Q5	Transistor	2SC1313-G or F (2SC1345-E or D)		
Q6	Transistor	2SC1313-G or F (2SC1345-E or D)		

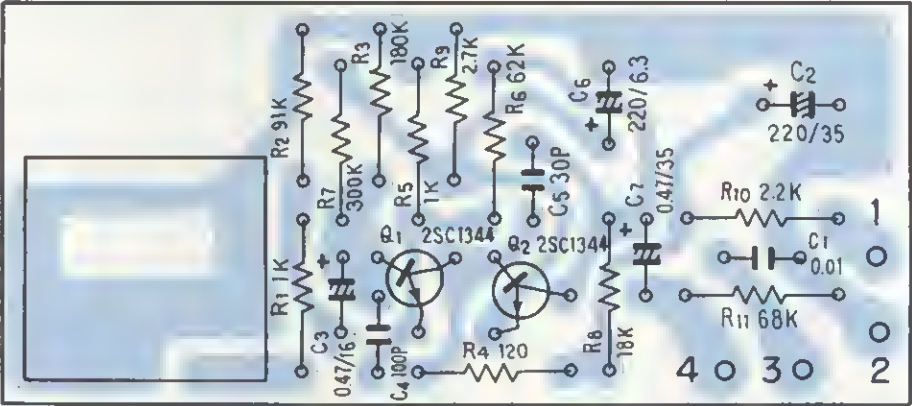
**CAPACITORS**

Symbol	Description			Part No.	
C1	Electrolytic	1	25V	CSSA 010M 25	
C2	Electrolytic	1	25V	CSSA 010M 25	
C3	Ceramic	100p	50V	CCDSL 101K 50	
C4	Ceramic	100p	50V	CCDSL 101K 50	
C5	Ceramic	82p	50V	CCDSL 820K 50	
C6	Ceramic	82p	50V	CCDSL 820K 50	
C7	Electrolytic	330	6V	CEA 331P 6	
C8	Electrolytic	330	6V	CEA 331P 6	
C9	Ceramic	4p	50V	CCDSL 040D 50	
C10	Ceramic	4p	50V	CCDSL 040D 50	
C11	Electrolytic	3.3	25V	CEANL 3R3P 25	
C12	Electrolytic	3.3	25V	CEANL 3R3P 25	
C13	Styrol	0.0051	50V	CQSA 512G 50	
C14	Styrol	0.0051	50V	CQSA 512G 50	
C15	Styrol	0.0015	50V	CQSA 152G 50	
C16	Styrol	0.0015	50V	CQSA 152G 50	
C17	Electrolytic	100	25V	CEA 101P 25	
C18	Electrolytic	220	16V	CEA 221P 16	

13. 4 MICROPHONE AMPLIFIER ASSEMBLY (AWM-064-0)



Foil Side (AWM-064-0)



2SC1344



2SC1312



## Parts List of Microphone Amplifier Assembly

## OTHERS

Symbol	Description	Part No.	
	Phone jack (Microphe)	AKN-007-0	

## SEMICONDUCTORS

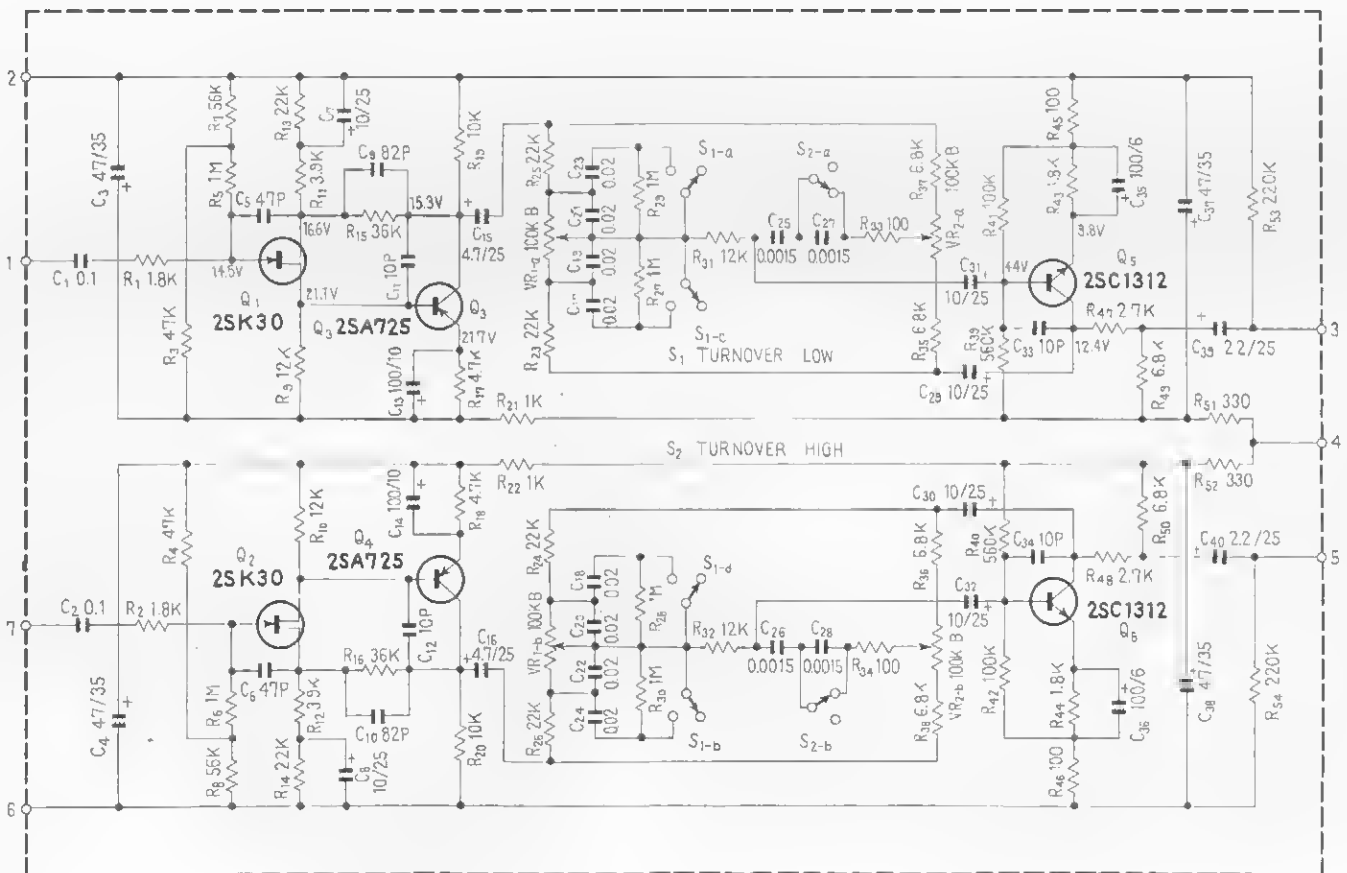
Symbol	Description	Part No.	
Q1	Transistor 2SC1344-E or D (2SC1312-G or F)		
Q2	Transistor 2SC1344-E or D (2SC1312-G or F)		

## CAPACITORS

Symbol	Description	Part No.	
C1	Ceramic 0.01 50V	CKDYF 103Z 50	
C2	Electrolytic 220 35V	CEA 221P 35	
C3	Electrolytic 0.47 16V	CSSA R47M 16	
C4	Ceramic 100p 50V	CCDSL 101K 50	
C5	Ceramic 30p 50V	CCDSL 300K 50	
C6	Electrolytic 220 6V	CEA 221P 6	
C7	Electrolytic 0.47 50V	CEANL R47P 50	

## RESISTORS

Symbol	Description	Part No.	
R1	Carbon film 1k	RD%PM 102J	
R2	Carbon film 91k	RD%PM 913J	
R3	Carbon film 180k	RD%PM 184J	
R4	Carbon film 120k	RD%PM 124J	
R5	Carbon film 1k	RD%PM 102J	
R6	Carbon film 62k	RD%PM 623J	
R7	Carbon film 300k	RD%PM 304J	
R8	Carbon film 18k	RD%PM 183J	
R9	Carbon film 2.7k	RD%PM 272J	
R10	Carbon film 2.2k	RD%PM 222J	
R11	Carbon film 68k	RD%PM 683J	



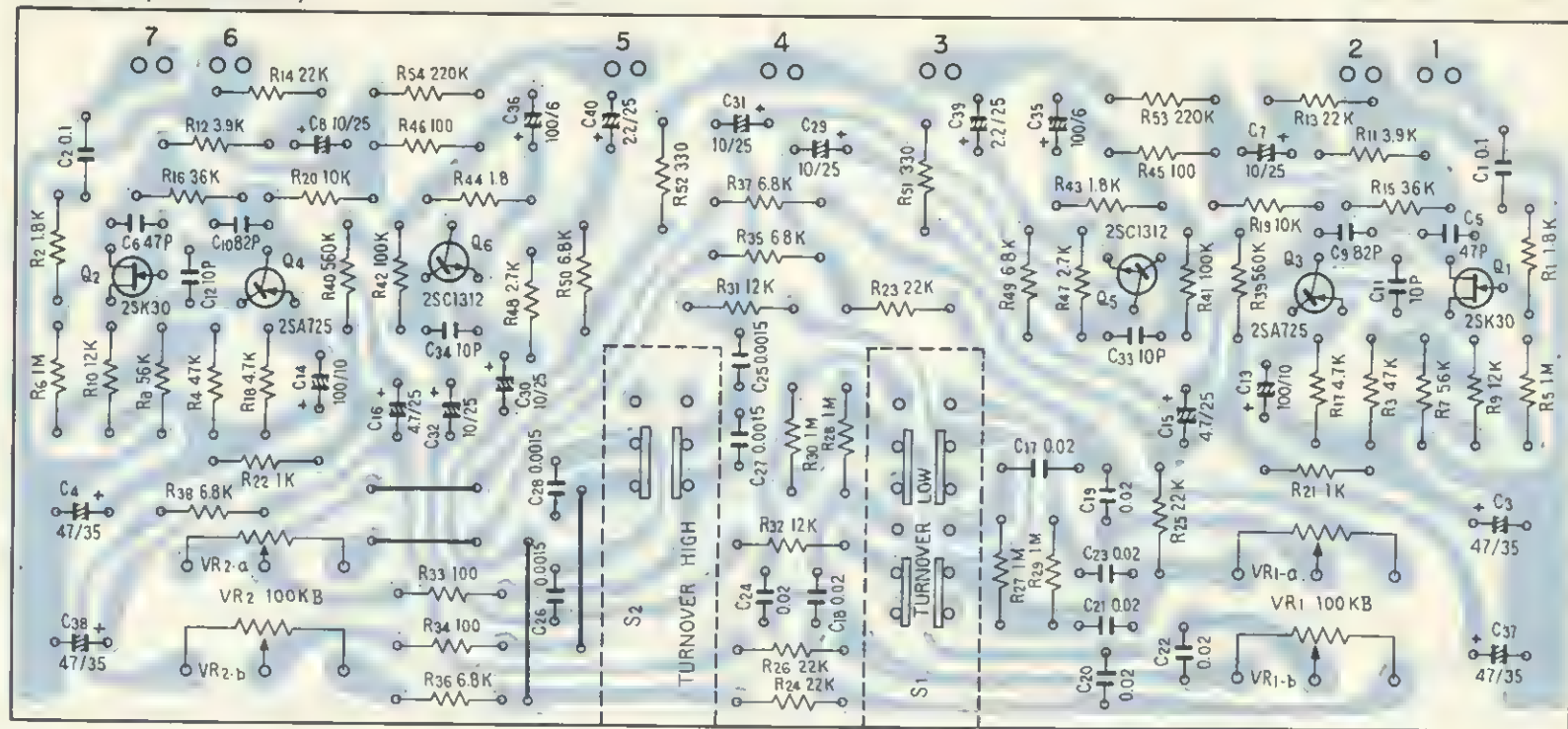
2SC1344

2SA725  
2SC1312

2SK30



Foil Side (AWG-029-0)



SX-838

Parts List of Control Amplifier Assembly

SEMICONDUCTORS

Symbol	Description		Part No.	
Q1	FET	2SK30-Y		
Q2	FET	2SK30-Y		
Q3	Transistor	2SA725-F or G		
Q4	Transistor	2SA725-F or G		
Q5	Transistor	2SC1312-F or G (2SC1344-D or E)		
Q6	Transistor	2SC1312-F or G (2SC1344-D or E)		

CAPACITORS

Symbol	Description			Part No.	
C1	Mylar	0.1	50V	CQMA 104K 50	
C2	Mylar	0.1	50V	CQMA 104K 50	
C3	Electrolytic	47	35V	CEA 470P 35	
C4	Electrolytic	47	35V	CEA 470P 35	
C5	Ceramic	47p	50V	CCDSL 470K 50	
C6	Ceramic	47p	50V	CCDSL 470K 50	
C7	Electrolytic	10	25V	CSZA 100P 25	
C8	Electrolytic	10	25V	CSZA 100P 25	
C9	Ceramic	82p	50V	CCDSL 820K 50	
C10	Ceramic	82p	50V	CCDSL 820K 50	
C11	Ceramic	10p	50V	CCDSL 100K 50	
C12	Ceramic	10p	50V	CCDSL 100K 50	
C13	Electrolytic	100	10V	CEA 101P 10	
C14	Electrolytic	100	10V	CEA 101P 10	
C15	Electrolytic	4.7	25V	CEANL 4R7P 25	
C16	Electrolytic	4.7	25V	CEANL 4R7P 25	
C17	Mylar	0.02	50V	CQMA 203J 50	
C18	Mylar	0.02	50V	CQMA 203J 50	
C19	Mylar	0.02	50V	CQMA 203J 50	
C20	Mylar	0.02	50V	CQMA 203J 50	
C21	Mylar	0.02	50V	CQMA 203J 50	
C22	Mylar	0.02	50V	CQMA 203J 50	
C23	Mylar	0.02	50V	CQMA 203J 50	
C24	Mylar	0.02	50V	CQMA 203J 50	
C25	Mylar	0.0015	50V	CQMA 152J 50	
C26	Mylar	0.0015	50V	CQMA 152J 50	
C27	Mylar	0.0015	50V	CQMA 152J 50	
C28	Mylar	0.0015	50V	CQMA 152J 50	
C29	Electrolytic	10	25V	CSZA 100P 25	
C30	Electrolytic	10	25V	CSZA 100P 25	
C31	Electrolytic	10	25V	CSZA 100P 25	
C32	Electrolytic	10	25V	CSZA 100P 25	
C33	Ceramic	10p	50V	CCDSL 100K 50	
C34	Ceramic	10p	50V	CCDSL 100K 50	
C35	Electrolytic	100	6V	CEA 101P 6	



Symbol	Description			Part No.	
C36	Electrolytic	100	6V	CEA 101P 6	
C37	Electrolytic	47	35V	CEA 470P 35	
C38	Electrolytic	47	35V	CEA 470P 35	
C39	Electrolytic	2.2	25V	CSZA 2R2M 25	
C40	Electrolytic	2.2	25V	CSZA 2R2M 25	

## RESISTORS AND POTENTIOMETERS

Symbol	Description			Part No.	
VR1	Variable resistor	(100k-B)		ACV-136-0	
VR2	Variable resistor	(100k-B)		ACV-136-0	
R1	Carbon film	1.8k		RD4PM 182J	
R2	Carbon film	1.8k		RD4PM 182J	
R3	Carbon film	47k		RD4PM 473J	
R4	Carbon film	47k		RD4PM 473J	
R5	Carbon film	1M		RD4PM 105J	
R6	Carbon film	1M		RD4PM 105J	
R7	Carbon film	56k		RD4PM 563J	
R8	Carbon film	56k		RD4PM 563J	
R9	Carbon film	12k		RD4PM 123J	
R10	Carbon film	12k		RD4PM 123J	
R11	Carbon film	3.9k		RD4PM 392J	
R12	Carbon film	3.9k		RD4PM 392J	
R13	Carbon film	22k		RD4PM 223J	
R14	Carbon film	22k		RD4PM 223J	
R15	Carbon film	36k		RD4PM 363J	
R16	Carbon film	36k		RD4PM 363J	
R17	Carbon film	4.7k		RD4PM 472J	
R18	Carbon film	4.7k		RD4PM 472J	
R19	Carbon film	10k		RD4PM 103J	
R20	Carbon film	10k		RD4PM 103J	
R21	Carbon film	1k		RD4PM 102J	
R22	Carbon film	1k		RD4PM 102J	
R23	Carbon film	22k		RD4PM 223J	
R24	Carbon film	22k		RD4PM 223J	
R25	Carbon film	22k		RD4PM 223J	
R26	Carbon film	22k		RD4PM 223J	
R27	Carbon film	1M		RD4PM 105J	
R28	Carbon film	1M		RD4PM 105J	
R29	Carbon film	1M		RD4PM 105J	
R30	Carbon film	1M		RD4PM 105J	
R31	Carbon film	12k		RD4PM 123J	
R32	Carbon film	12k		RD4PM 123J	
R33	Carbon film	100		RD4PM 101J	
R34	Carbon film	100		RD4PM 101J	
R35	Carbon film	6.8k		RD4PM 682J	
R36	Carbon film	6.8k		RD4PM 682J	
R37	Carbon film	6.8k		RD4PM 682J	
R38	Carbon film	6.8k		RD4PM 682J	

Symbol	Description		Part No.	
R39	Carbon film	560k	RD%PM 564J	
R40	Carbon film	560k	RD%PM 564J	
R41	Carbon film	100k	RD%PM 104J	
R42	Carbon film	100k	RD%PM 104J	
R43	Carbon film	1.8k	RD%PM 182J	
R44	Carbon film	1.8k	RD%PM 182J	
R45	Carbon film	100	RD%PM 101J	
R46	Carbon film	100	RD%PM 101J	
R47	Carbon film	2.7k	RD%PM 272J	
R48	Carbon film	2.7k	RD%PM 272J	
R49	Carbon film	6.8k	RD%PM 682J	
R50	Carbon film	6.8k	RD%PM 682J	
R51	Carbon film	330	RD%PM 331J	
R52	Carbon film	330	RD%PM 331J	
R53	Carbon film	220k	RD%PM 224J	
R54	Carbon film	220k	RD%PM 224J	

## SWITCHES

Symbol	Description	Part No.	
S1	Lever switch (Turn over low)	ASK-071-0	
S2	Lever switch (Turn over high)	ASK-069-0	



2SA679

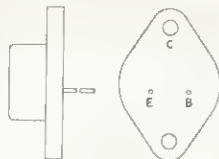
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2SB539

2SD287

2SC1079

2SC1116



2SB528

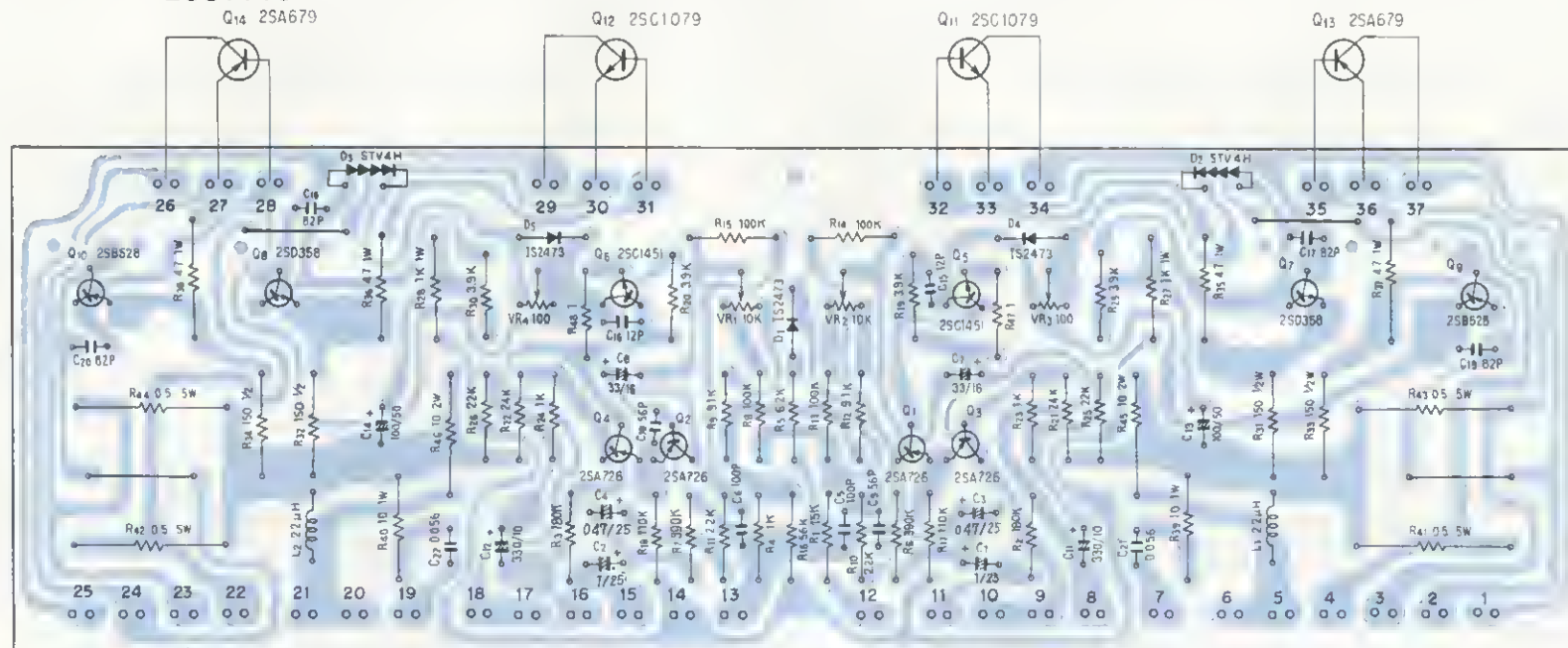
2SD358



2SC1451



2SA726



Foil Side (AWH-031-A)

**Parts List of Power Amplifier Assembly (AWH-031-A)**
**SEMICONDUCTORS**

Symbol	Description	Part No.	
D1	Transistor 2SA726-F or G		
Q2	Transistor 2SA726-F or G		
Q3	Transistor 2SA726-F or G		
Q4	Transistor 2SA726-F or G		
Q5	Transistor 2SC1451-V or B		
Q6	Transistor 2SC1451-V or B		
Q7	Transistor 2SB528-C or D		
Q8	Transistor 2SB528-C or D		
Q9	Transistor 2SD358-C or D		
D10	Transistor 2SD358-C or D		
Q11	Transistor 2SC1079-R or Y (2SC1116-R, D or Y) (2SD287-L or M)		
Q13	Transistor 2SC1079-R or Y (2SC1116-R, D or Y) (2SD287-L or M)		
Q12	Transistor 2SA679-R or Y (2SA747-R, D or Y) (2SB539-L or M)		
D14	Transistor 2SA679-R or Y (2SA747-R, Q or Y) (2SB539-L or M)		
D1	Diode 1S2473		
D2	Varistor STV-4H		
D3	Varistor STV-4H		
D4	Diode 1S2473		
D5	Diode 1S2473		

**RESISTORS AND POTENTIOMETERS**

Symbol	Description	Part No.	
VR1	Variable resistor 100k-B	ACP-029-A	
VR2	Variable resistor 100k-B	ACP-029-A	
VR3	Variable resistor 100-B	ACP-019-B	
VR4	Variable resistor 100-B	ACP-019-B	
R1	Carbon film 15k	RD%PS 153J	
R2	Carbon film 180k	RD%PS 184J	
R3	Carbon film 180k	RD%PS 184J	
R4	Carbon film 1k	RD%PS 102J	
R5	Carbon film 6.8k	RD%PS 682J	
R6	Carbon film 390k	RD%PS 394J	

Continued on the Next Page

Symbol	Description			Part No.	
R7	Carbon film	390k		RD½PS 394J	
R8	Carbon film	100k		RD½PS 104J	
R9	Carbon film	9.1k		RD½PS 912J	
R10	Carbon film	2.2k		RD½PS 222J	
R11	Carbon film	2.2k		RD½PS 222J	
R12	Carbon film	9.1k		RD½PS 912J	
R13	Carbon film	100k		RD½PS 104J	
R14	Carbon film	100k		RD½PS 104J	
R15	Carbon film	100k		RD½PS 104J	
R16	Carbon film	56k		RD½PS 563J	
R17	Carbon film	110k		RD½PS 114J	
R18	Carbon film	110k		RD½PS 114J	
R19	Carbon film	3.9k		RD½PS 392J	
R20	Carbon film	3.9k		RD½PS 392J	
R21	Carbon film	24k		RD½PS 243J	
R22	Carbon film	24k		RD½PS 243J	
R23	Carbon film	1k		RD½PS 102J	
R24	Carbon film	1k		RD½PS 102J	
R25	Carbon film	22k		RD½PS 223J	
R26	Carbon film	22k		RD½PS 223J	
R27	Metal oxide	1k	1W	RS1P 102J	
R28	Metal oxide	1k	1W	RS1P 102J	
R29	Carbon film	3.9k		RD½PS 392J	
R30	Carbon film	3.9k		RD½PS 392J	
R31	Carbon film	150	½W	RD½PS 151J	
R32	Carbon film	150	½W	RD½PS 151J	
R33	Carbon film	150	½W	RD½PS 151J	
R34	Carbon film	150	½W	RD½PS 151J	
R35	Metal film	4.7	1W	RN1H 4R7K	
R36	Metal film	4.7	1W	RN1H 4R7K	
R37	Metal film	4.7	1W	RN1H 4R7K	
R38	Metal film	4.7	1W	RN1H 4R7K	
R39	Metal oxide	10	1W	RS1P 100J	
R40	Metal oxide	10	1W	RS1P 100J	
R41	Wire wound	0.5	5W	RT5B 0R5K	
R42	Wire wound	0.5	5W	RT5B 0R5K	
R43	Wire wound	0.5	5W	RT5B 0R5K	
R44	Wire wound	0.5	5W	RT5B 0R5K	
R45	Metal oxide	10	2W	RS2P 100J	
R46	Metal oxide	10	2W	RS2P 100J	
R47	Carbon film	1		RD½PS 010J	
R48	Carbon film	1		RD½PS 010J	

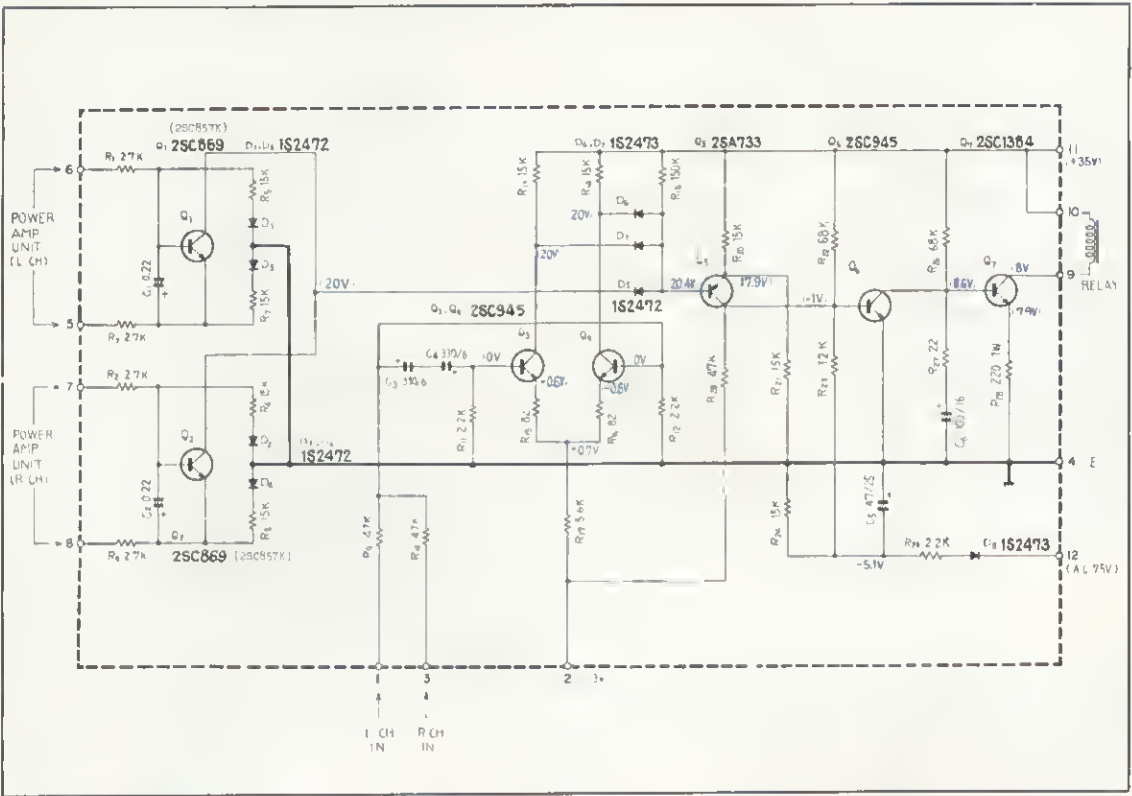
**CAPACITORS**

Symbol	Description			Part No.	
C1	Electrolytic	1	25V	CSSA 010M 25	
C2	Electrolytic	1	25V	CSSA 010M 25	
C3	Electrolytic	0.47	25V	CSSA R47M 25	
C4	Electrolytic	0.47	25V	CSSA R47M 25	
C5	Ceramic	100p	50V	CCDSL 101K 50	
C6	Ceramic	100p	50V	CCDSL 101K 50	
C7	Electrolytic	33	16V	CEA 330P 16	
C8	Electrolytic	33	16V	CEA 330P 16	
C9	Ceramic	56p	50V	CCDSL 560K 50	
C10	Ceramic	56p	50V	CCDSL 560K 50	
C11	Electrolytic	330	10V	CEA 331P 10	
C12	Electrolytic	330	10V	CEA 331P 10	
C13	Electrolytic	100	50V	CEA 101P 50	
C14	Electrolytic	100	50V	CEA 101P 50	
C15	Ceramic	12p	500V	CCDSL 120K 500	
C16	Ceramic	12p	500V	CCDSL 120K 500	
C17	Ceramic	82p	500V	CCDSL 820K 500	
C18	Ceramic	82p	500V	CCDSL 820K 500	
C19	Ceramic	82p	500V	CCDSL 820K 500	
C20	Ceramic	82p	500V	CCDSL 820K 500	
C21	Mylar	0.056	50V	CQMA 563M 50	
C22	Mylar	0.056	50V	CQMA 563M 50	

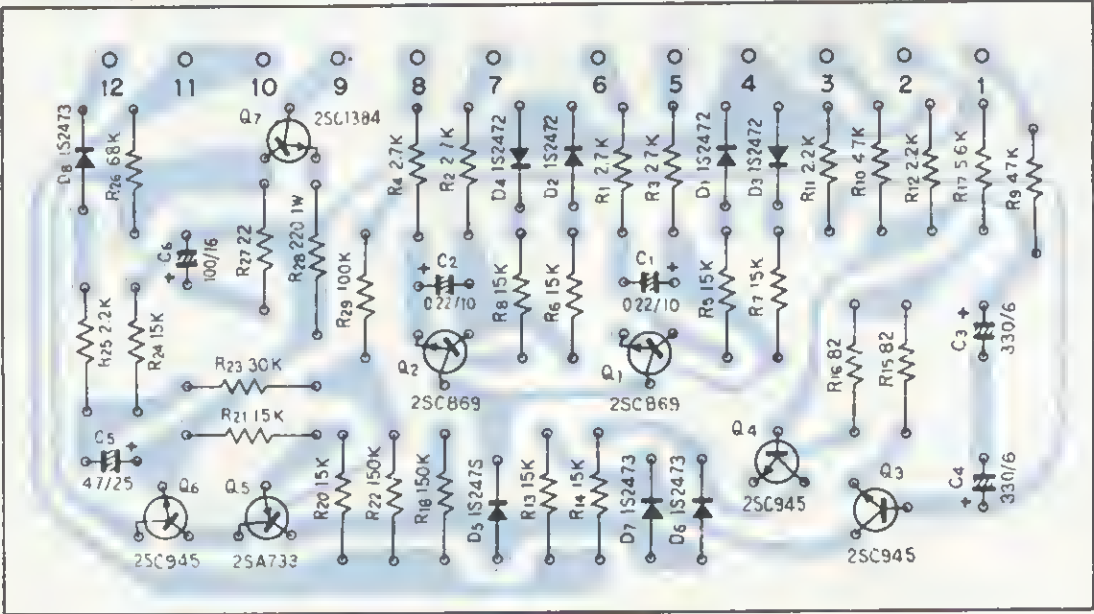
**OTHERS**

Symbol	Description	Part No.	
L1	AF choke coil	T63-009-0	
L2	AF choke coil	T63-009-0	
	Socket (power transistor)	AKH-001-0	
	Spacer (insulator)	AEC-076-0	
	Heat sink	ANH-117-0	
	Fuse holder	AKR-013-0	

13. 7 PROTECTION CIRCUIT ASSEMBLY (AWM-025-C)



Foil Side (AWM-025-C)





Parts List of Protection Circuit Assembly (AWM-025-C)

SEMICONDUCTORS

Symbol	Description		Part No.	
Q1	Transistor	2SC869-C, 8 or D (2SC857K-A) (2SC1515K)		
Q2	Transistor	2SC869-C, 8 or D (2SC857K-A) (2SC1515K)		
Q3	Transistor	2SC945-Q or R		
Q4	Transistor	2SC945-Q or R		
Q5	Transistor	2SA733-Q or R		
Q6	Transistor	2SC945-Q or R		
Q7	Transistor	2SC1384-R or Q		
D1	Diode	1S2472		
D2	Diode	1S2472		
D3	Diode	1S2472		
D4	Diode	1S2472		
D5	Diode	1S2472		
D6	Diode	1S2473		
D7	Diode	1S2473		
D8	Diode	1S2473		

RESISTORS

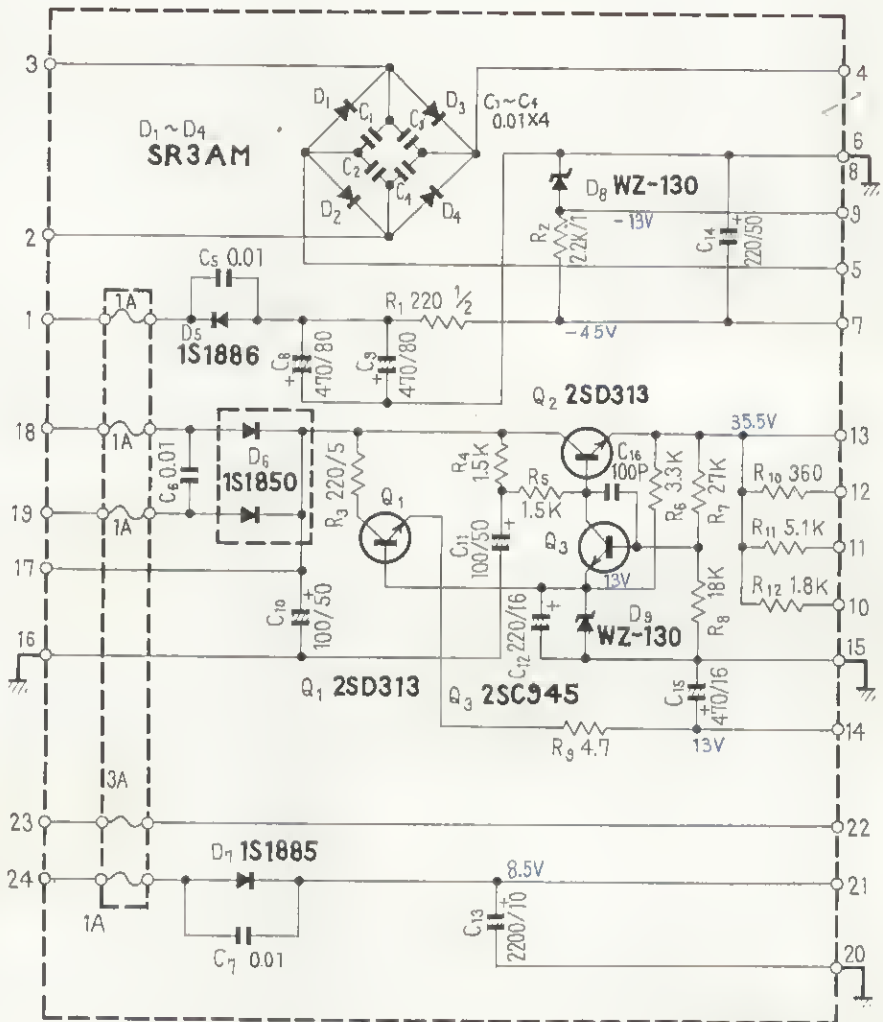
Symbol	Description		Part No.	
R1	Carbon film	2.7k	RD%PS 272J	
R2	Carbon film	2.7k	RD%PS 272J	
R3	Carbon film	2.7k	RD%PS 272J	
R4	Carbon film	2.7k	RD%PS 272J	
R5	Carbon film	15k	RD%PS 153J	
R6	Carbon film	15k	RD%PS 153J	
R7	Carbon film	15k	RD%PS 153J	
R8	Carbon film	15k	RD%PS 153J	
R9	Carbon film	47k	RD%PS 473J	
R10	Carbon film	47k	RD%PS 473J	
R11	Carbon film	2.2k	RD%PS 222J	
R12	Carbon film	2.2k	RD%PS 222J	
R13	Carbon film	15k	RD%PS 153J	
R14	Carbon film	15k	RD%PS 153J	
R15	Carbon film	82	RD%PS 820J	
R16	Carbon film	82	RD%PS 820J	
R17	Carbon film	5.6k	RD%PS 562J	
R18	Carbon film	150k	RD%PS 154J	
R20	Carbon film	15k	RD%PS 153J	
R21	Carbon film	15k	RD%PS 153J	

Symbol	Description			Part No.	
R22	Carbon film	68k		RD½PS 683J	
R23	Carbon film	12k		RD½PS 123J	
R24	Carbon film	15k		RD½PS 153J	
R25	Carbon film	2.2k		RD½PS 222J	
R26	Carbon film	68k		RD½PS 683J	
R27	Carbon film	22		RD½PS 220J	
R28	Metal oxide	220	1W	RS1P 221J	
R29	Carbon film	47k		RD½PS 473J	

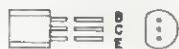
**CAPACITORS**

Symbol	Description			Part No.	
C1	Electrolytic	0.22	10V	CSSA R22M 10	
C2	Electrolytic	0.22	10V	CSSA R22M 10	
C3	Electrolytic	330	6V	CEA 331P 6	
C4	Electrolytic	330	6V	CEA 331P 6	
C5	Electrolytic	4.7	25V	CEA 4R7P 25	
C6	Electrolytic	100	16V	CEA 101P 16	

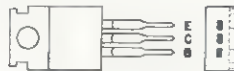
13. 8 POWER SUPPLY CIRCUIT ASSEMBLY (AWR-055-0)



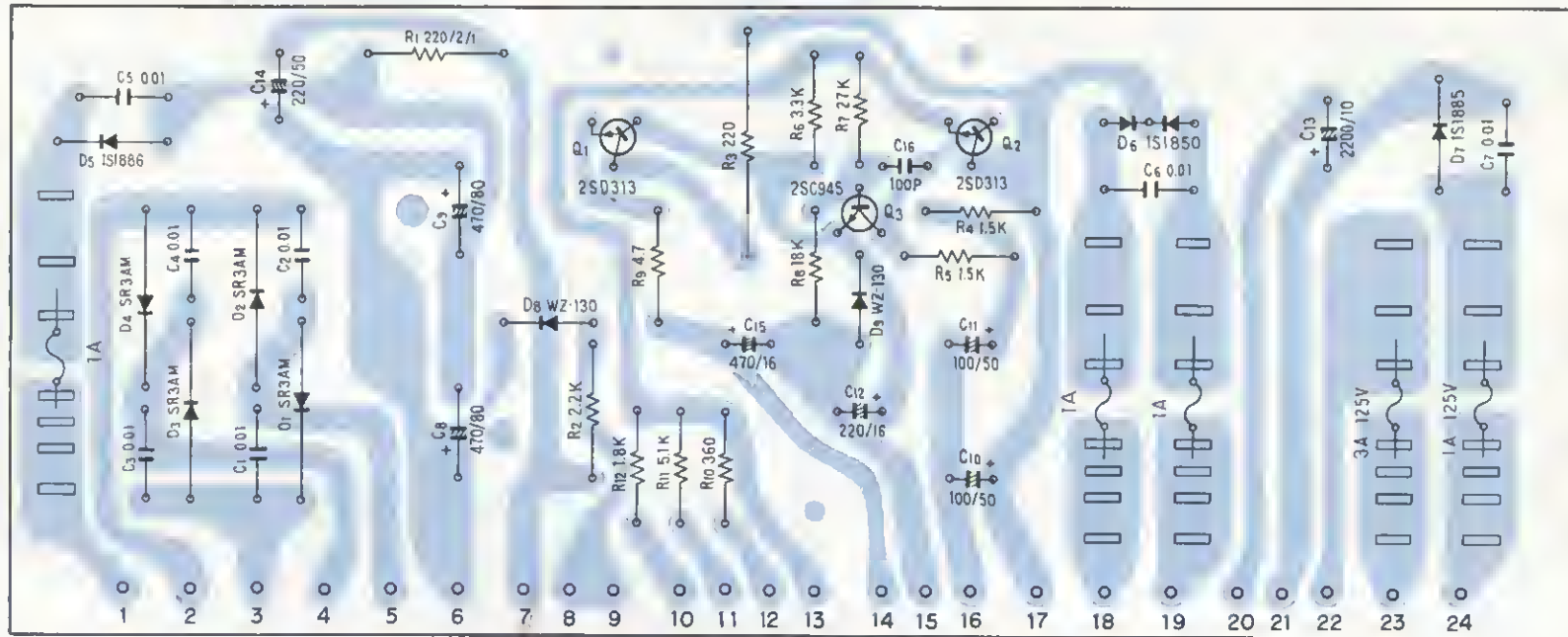
2SC945



2SD313



## Foil Side (AWR-055-0)



**Parts List of Power Supply Circuit Assembly (AWR-055-0)**
**SEMICONDUCTORS**

Symbol	Description		Part No.	
Q1	Transistor	2SD313-E		
Q2	Transistor	2SD313P-E or D		
Q3	Transistor	2SC945-Q or R		
D1	Diode	SR3AM-8		
D2	Diode	SR3AM-8		
D3	Diode	SR3AM-8		
D4	Diode	SR3AM-8		
D5	Diode	1S1886		
D6	Diode	1S1850		
D7	Diode	1S1885		
D8	Zener diode	WZ-130		
D9	Zener diode	WZ-130		

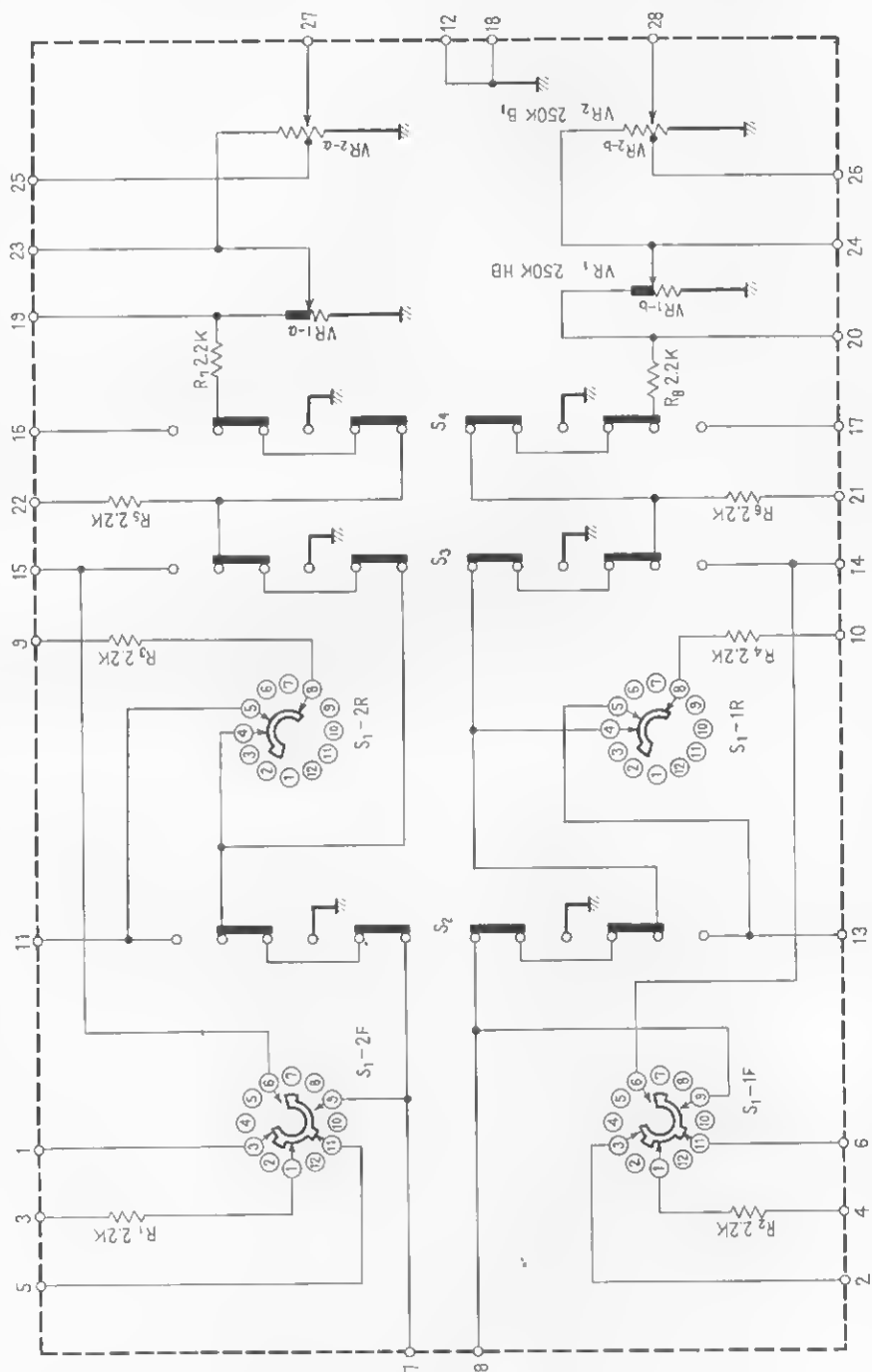
**RESISTORS**

Symbol	Description		Part No.	
R1	Carbon film	220 $\frac{1}{2}$ W	RD%PS 221J	
R2	Metal oxide	2.2k 1W	RS1P 222K	
R3	Wire wound	220 5W	RT58 221K	
R4	Carbon film	1.5k	RD%PS 152J	
R5	Carbon film	1.5k	RD%PS 152J	
R6	Carbon film	3.3k	RD%PS 332J	
R7	Carbon film	27k	RD%PS 273J	
R8	Carbon film	18k	RD%PS 183J	
R9	Carbon film	4.7	RD%PS 4R7J	
R10	Carbon film	360	RD%PS 361J	
R11	Carbon film	5.1k	RD%PS 512J	
R12	Carbon film	1.8k	RD%PS 182J	

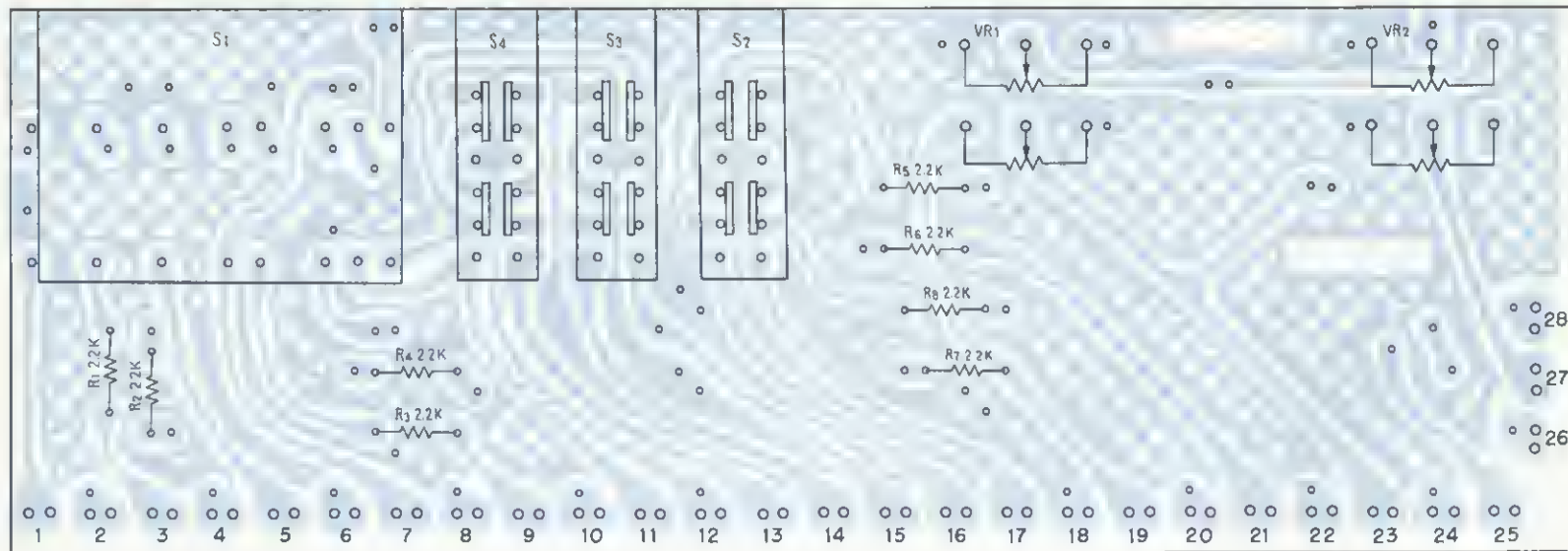
**CAPACITORS**

Symbol	Description		Part No.	
C1	Ceramic	0.01 150V	ACG-004-0	
C2	Ceramic	0.01 150V	ACG-004-0	
C3	Ceramic	0.01 150V	ACG-004-0	
C4	Ceramic	0.01 150V	ACG-004-0	
C5	Ceramic	0.01 150V	ACG-004-0	
C6	Ceramic	0.01 150V	ACG-004-0	
C7	Ceramic	0.01 150V	ACG-004-0	
C8	Electrolytic	470 80V	ACH-038-0	
C9	Electrolytic	470 80V	ACH-038-0	
C10	Electrolytic	100 50V	CEA 101P 50	
C11	Electrolytic	100 50V	CEA 101P 50	
C12	Electrolytic	220 16V	CEA 221P 16	
C13	Electrolytic	2,200 10V	CEA 222P 10	
C14	Electrolytic	220 50V	CEA 221P 50	
C15	Electrolytic	470 16V	CEA 471P 16	
C16	Ceramic	100p 50V	CCDSL 101K 50	

# 13. 9 SWITCH & VOLUME ASSEMBLY (AWX-070-0)



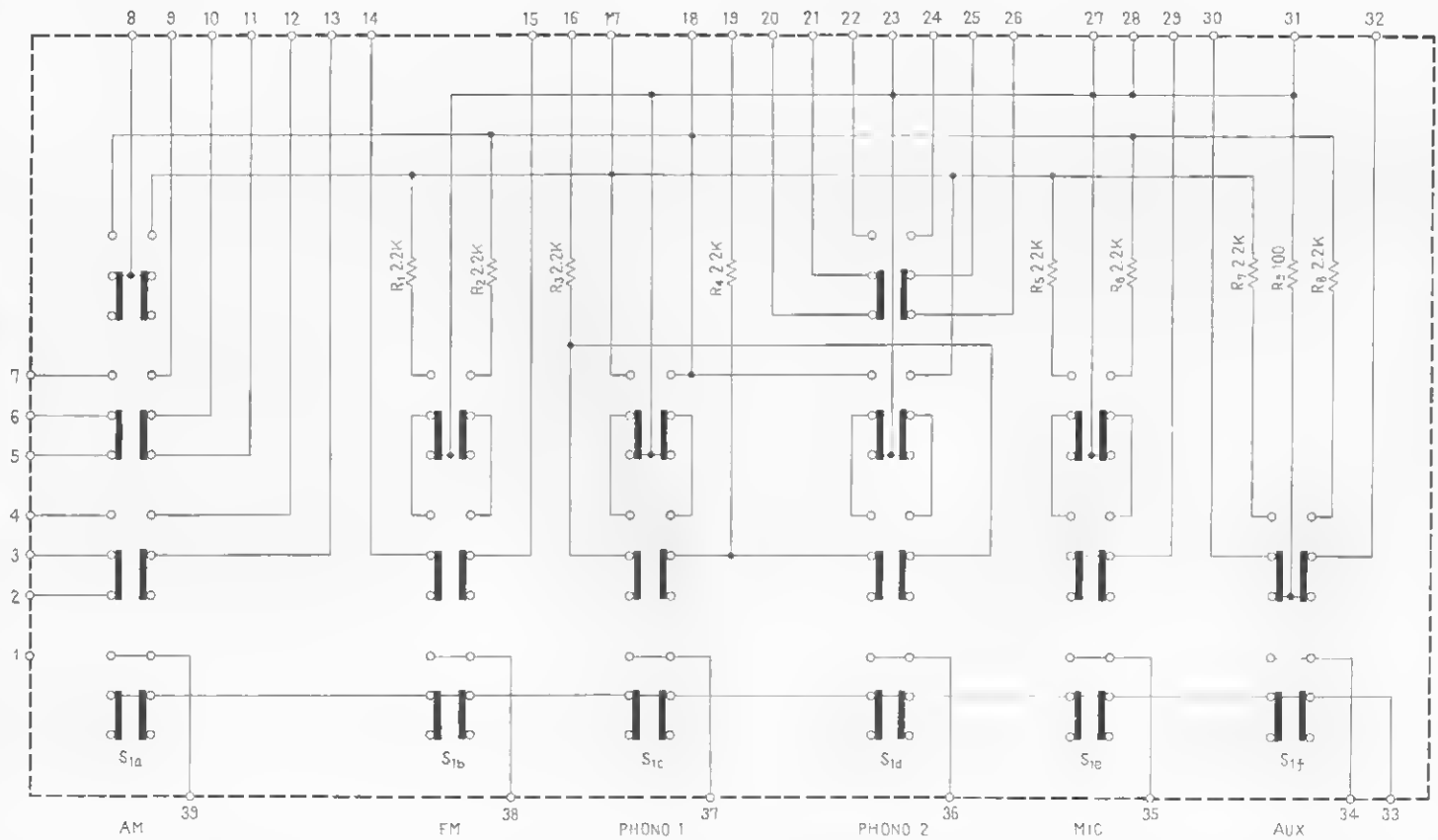
# Foil Side (AWX-070-0)

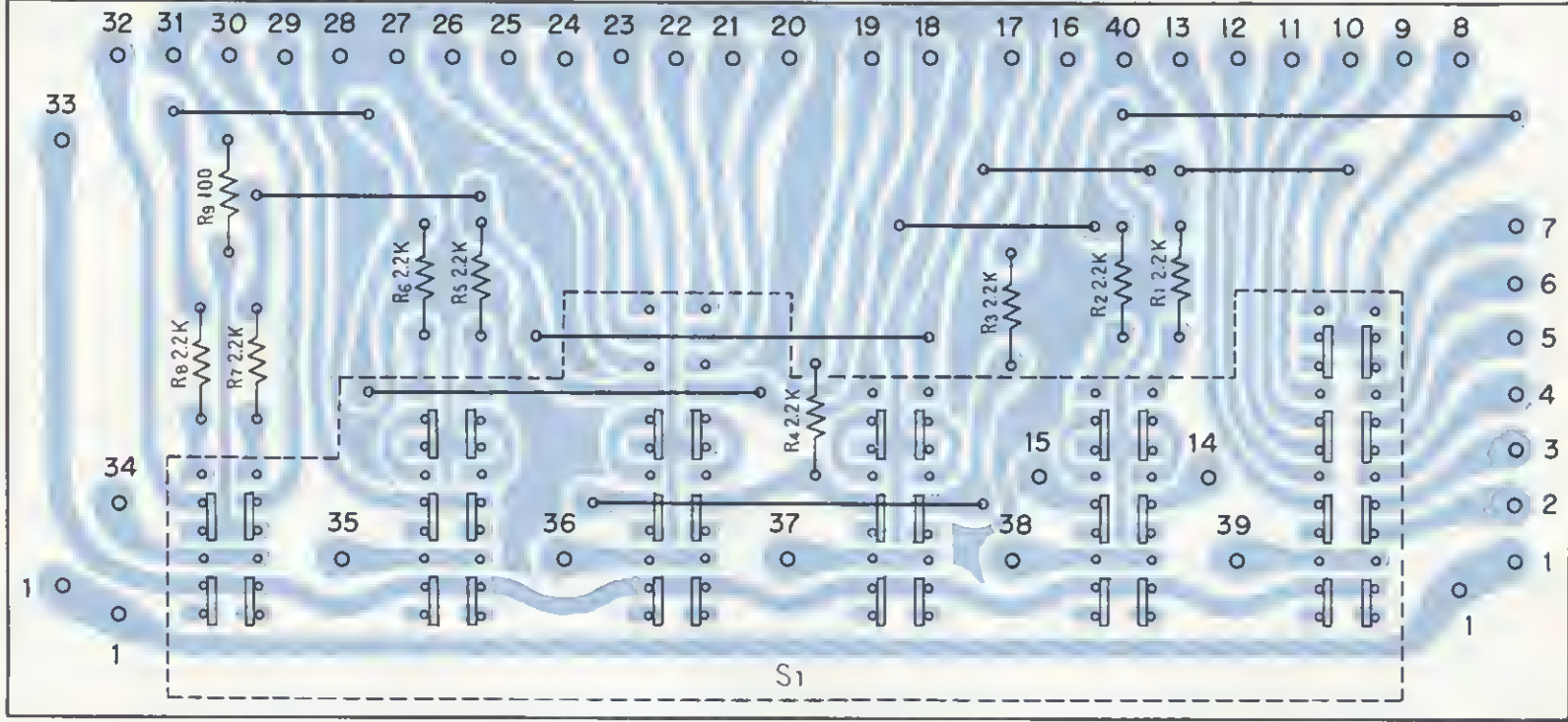


## Parts List of Switch &amp; Volume Assembly (AWX-070-0)

Symbol	Description		Part No.	
VR1	Variable resistor	250k-HB (Balance)	ACV-135-0	
VR2	Variable resistor	250k-B1 (Volume)	ACV-134-0	
S1	Rotary switch	(Rec selector)	ASD-017-0	
S2	Lever switch	(Monitor 1)	ASK-072-0	
S3	Lever switch	(Monitor 2)	ASK-072-0	
S4	Lever switch	(NR adaptor)	ASK-072-0	
R1	Carbon film	2.2k	RD4PS 222J	
R2	Carbon film	2.2k	RD4PS 222J	
R3	Carbon film	2.2k	RD4PS 222J	
R4	Carbon film	2.2k	RD4PS 222J	
R5	Carbon film	2.2k	RD4PS 222J	
R6	Carbon film	2.2k	RD4PS 222J	
R7	Carbon film	2.2k	RD4PS 222J	
R8	Carbon film	2.2k	RD4PS 222J	





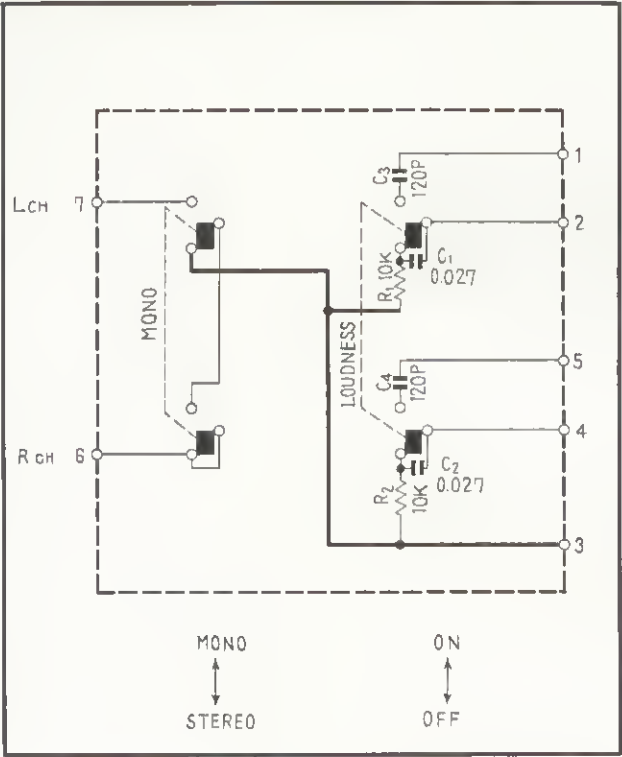


Parts List of Switch Circuit Assembly (AWS-073-0)

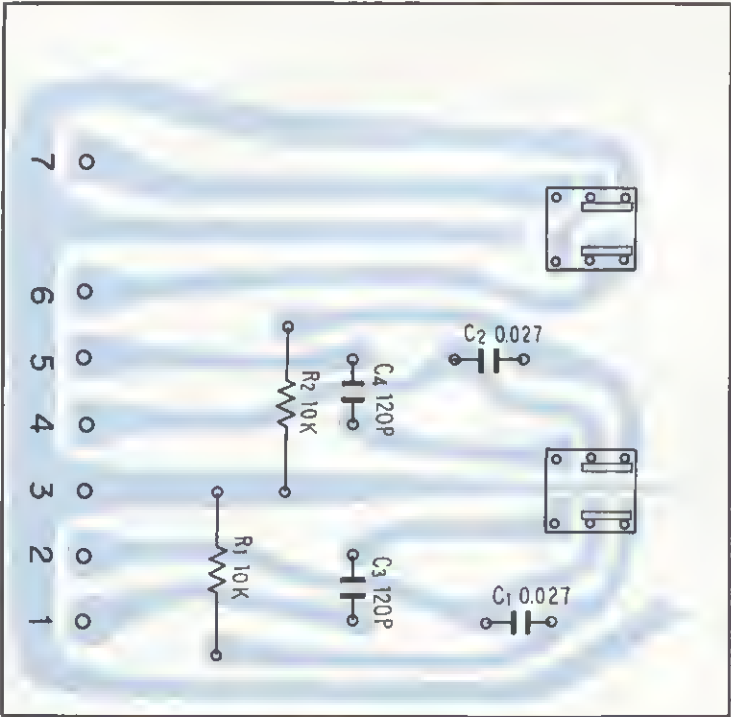
SWITCH AND RESISTORS

Symbol	Description		Part No.	
S1	Push switch	(Function)	ASG-069-A	
R1	Carbon film	2.2k	RD4PM 222J	
R2	Carbon film	2.2k	RD4PM 222J	
R3	Carbon film	2.2k	RD4PM 222J	
R4	Carbon film	2.2k	RD4PM 222J	
R5	Carbon film	2.2k	RD4PM 222J	
R6	Carbon film	2.2k	RD4PM 222J	
R7	Carbon film	2.2k	RD4PM 222J	
R8	Carbon film	2.2k	RD4PM 222J	
R9	Carbon film	100	RD4PM 101J	

13.11 SWITCH CIRCUIT ASSEMBLY (AWS-065-0)



Foil Side (AWS-065-0)



Parts List of Switch Circuit Assembly (AWS-065-0)

SWITCH

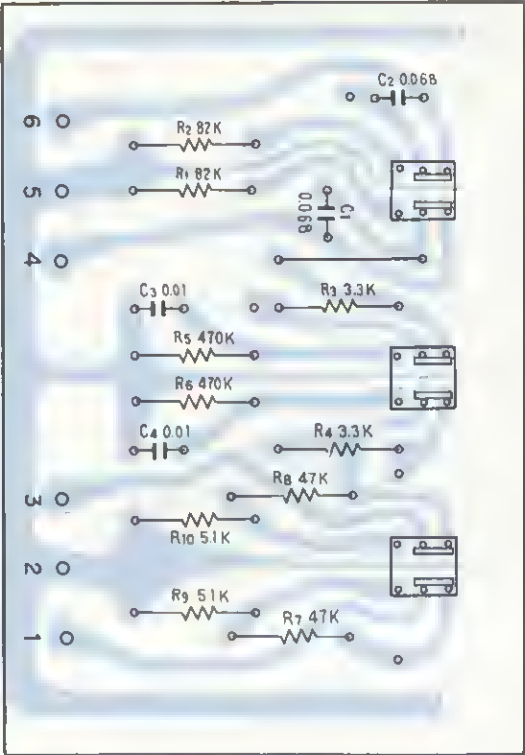
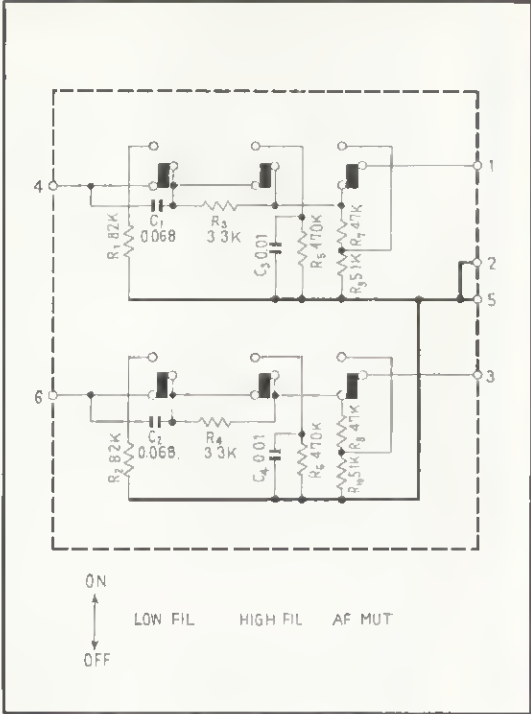
Symbol	Description	Part No.	
S1	Push switch (mode, loudness)	ASG-063-0	

CAPACITORS AND RESISTORS

Symbol	Description	Part No.	
C1	Mylar 0.027 50V	CQMA 273J 50	
C2	Mylar 0.027 50V	CQMA 273J 50	
C3	Ceramic 120p 50V	CCDSL 121K 50	
C4	Ceramic 120p 50V	CCDSL 121K 50	
R1	carbon film 10k	RD½PS 103J	
R2	carbon film 10k	RD½PS 103J	

13.12 SWITCH CIRCUIT ASSEMBLY (AWS-066-0)

Foil Side



SWITCH

Symbol	Description	Part No.	
S1	Push switch (filter, AF muting)	ASG-062-0	

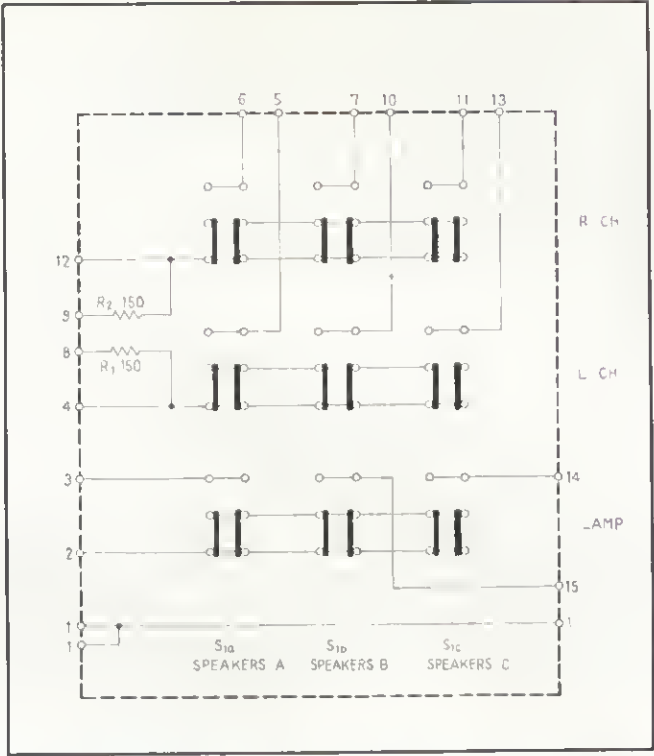
CAPACITORS

Symbol	Description	Part No.	
C1	Mylar 0.068 50V	CQMA 683K 50	
C2	Mylar 0.068 50V	CQMA 683K 50	
C3	Mylar 0.01 50V	CQMA 103K 50	
C4	Mylar 0.01 50V	CQMA 103K 50	

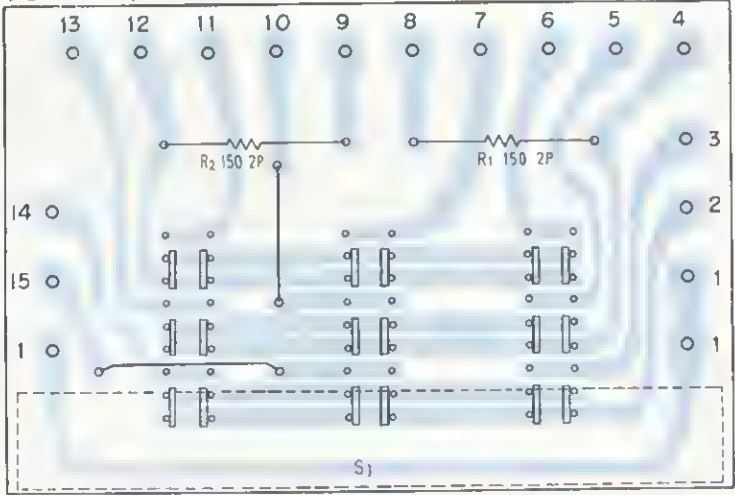
RESISTORS

Symbol	Description	Part No.	
R1	Carbon film 82k	RD%PM 823J	
R2	Carbon film 82k	RD%PM 823J	
R3	Carbon film 3.3k	RD%PM 332J	
R4	Carbon film 3.3k	RD%PM 332J	
R5	Carbon film 470k	RD%PM 474J	
R6	Carbon film 470k	RD%PM 474J	
R7	Carbon film 47k	RD%PM 473J	
R8	Carbon film 47k	RD%PM 473J	
R9	Carbon film 5.1k	RD%PM 512J	
R10	Carbon film 5.1k	RD%PM 512J	

12.13 SWITCH CIRCUIT ASSEMBLY (AWS-074-0)

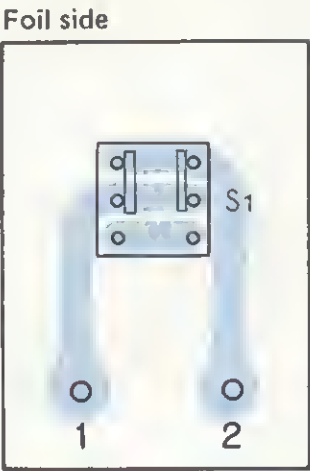


Foil Side (AWS-074-0)



Symbol	Description			Part No.	
S1	Push switch (speakers)			ASG-068-0	
R1	Metal oxide	150	2W	RS2P 151K	
R2	Metal oxide	150	2W	RS2P 151K	

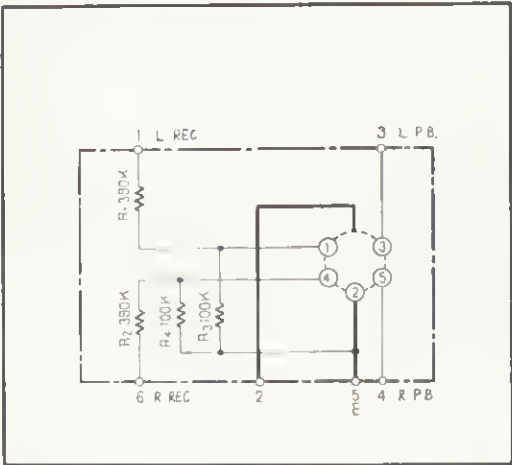
13.14 SWITCH CIRCUIT ASSEMBLY (AWS-075-0)



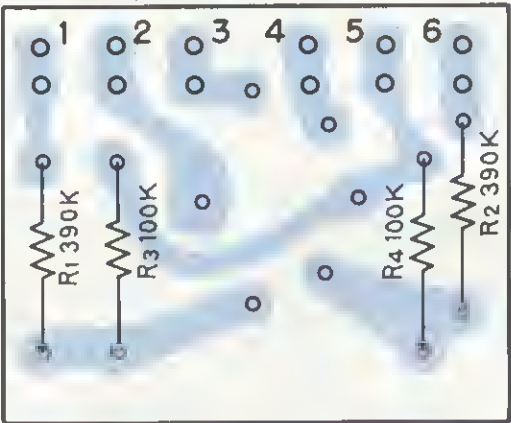
Parts List of Switch Circuit Assembly

Symbol	Description	Part No.	
S1	Push switch (FM muting)	ASG-058-0	

13.15 5P CONNECTOR ASSEMBLY (AWX-062-0)



Foil Side (AWS-062-0)



Symbol	Description	Part No.	
R1	Connector (DIN type 5P)	AKP-007-0	
R2	Carbon film 390k	RD%PS 394J	
R3	Carbon film 100k	RD%PS 104J	
R4	Carbon film 100k	RD%PS 104J	





- CAPACITORS: IN  $\mu\text{F}$  UNLESS OTHERWISE NOTED p: pF
- RESISTORS: IN  $\Omega$ ,  $\frac{1}{4}\text{W}$  UNLESS OTHERWISE NOTED k: k $\Omega$ , M: M $\Omega$

## Miscellaneous Parts List

### CAPACITORS

Symbol	Description				Part No.	
C1	Electrolytic	8,000	50V		ACH-015-0	
C2	Electrolytic	8,000	50V		ACH-015-0	
C3	Electrolytic	1,000	63V		ACH-001-C	
C4	Ceramic	0.01	50V		CKOYF 103Z 50	
C7	Ceramic	0.01	250V		ACG-001-0	
C10	Ceramic	0.01	50V		CKOYF 103Z 50	

### SWITCHES

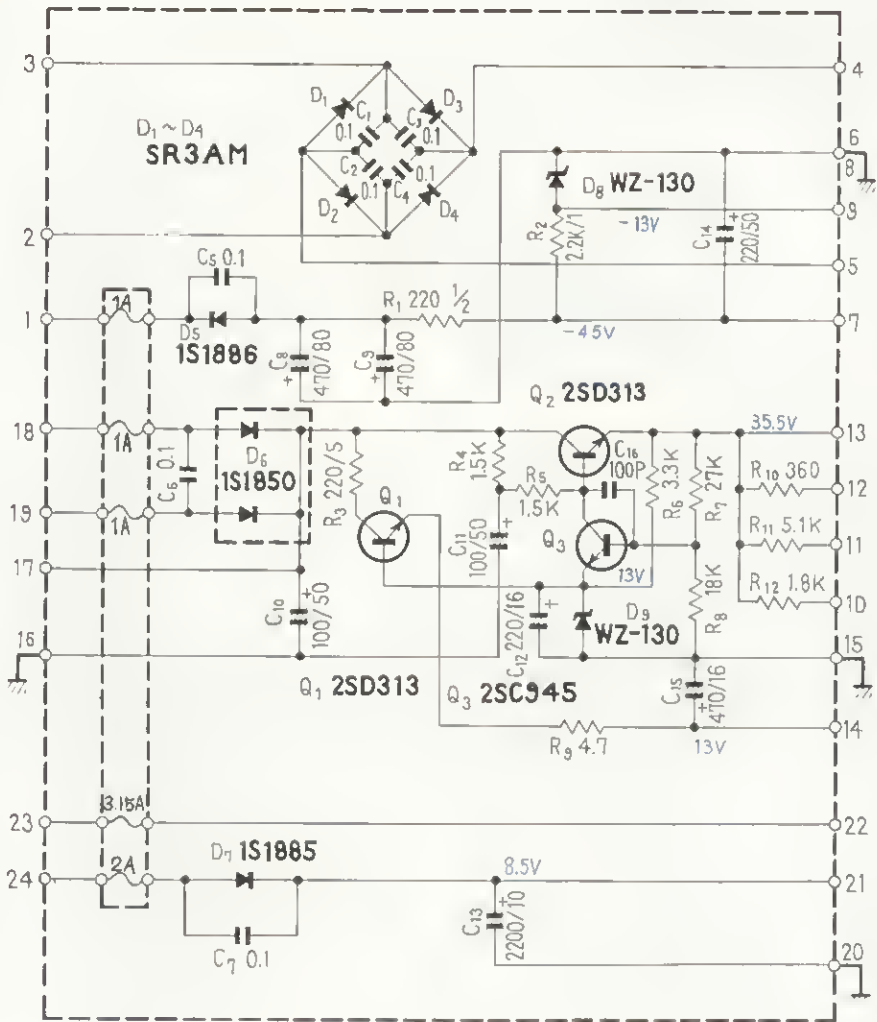
Symbol	Description		Part No.	
S1	Lever switch (Power)		ASK-068-0	
S2	Relay		ASR-007-0	

### OTHERS

Symbol	Description		Part No.	
	Tuner assembly		AWE-041-A	
	Equalizer amplifier assembly		AWF-011-0	
	Microphone amplifier assembly		AWM-064-0	
	Control amplifier assembly		AWG-029-0	
	Power amplifier assembly		AWH-031-A	
	Protection circuit assembly		AWM-025-C	
	Power supply circuit assembly		AWR-064-0	
	Switch & VR assembly		AWX-070-0	
	Switch circuit assembly (function)		AWS-073-0	
	Switch circuit assembly (FM muting)		AWS-075-0	
	Switch circuit assembly (mode, loudness)		AWS-065-0	
	Switch circuit assembly (filter, AF muting)		AWS-066-0	
	Switch circuit assembly (speakers)		AWS-074-0	
	Lamp load assembly		AWX-069-0	
	5P connector assembly		AWX-062-0	
	Wooden cabinet assembly		AMM-035-B	
	Phono jack - C (6 jacks)		AK8-016-0	
	Phono jack - A (4 jacks)		AKB-014-0	
	Phono jack (1 jack)		AKB-019-0	
	Antenna terminal board		AKA-002-0	

Symbol	Description	Part No.	
	Binding post for ground Power transformer	AKE-012-A ATT-1B1-0	
	Ferrite loopstick antenna Balun	ATB-026-0 T22-025-A	
	Pilot lamp 8V, 0.3A (dial scale) Pilot lamp 8V, 0.3A (meter) Pilot lamp 8V, 50mA (position) Pilot lamp 8V, 50mA (position)	E22-032-0 AEL-015-0 AEL-022-0 AEL-024-0	
	Fuse 3.15A (protection) Fuse 1A (protection) Fuse 2A (protection) Pilot lamp 6V, 30mA (stereo indicator)	AEK-042-0 E21-031-0 AEK-017-0 AEL-014-0	
	Speaker output terminal Phone jack (Headphone) Jumper plug Fuse holder (protection) PL socket	AKE-014-0 K72-026-0 AKM-004-A K91-0B8-C AKK-002-0	
	Connector (AC power) FM antenna Operating instructions (English) Operating instructions (French/German) Packing case	AKP-008-0 ADH-002-0 ARB-101-0 ARD-067-0 AHD-2T3-A	
	Side pad (L) Side pad (R) Inside packing	AHA-066-A AHA-067-A AHC-014-A	

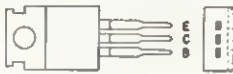
14.2 Power Supply Circuit Assembly (AWR-064-0)



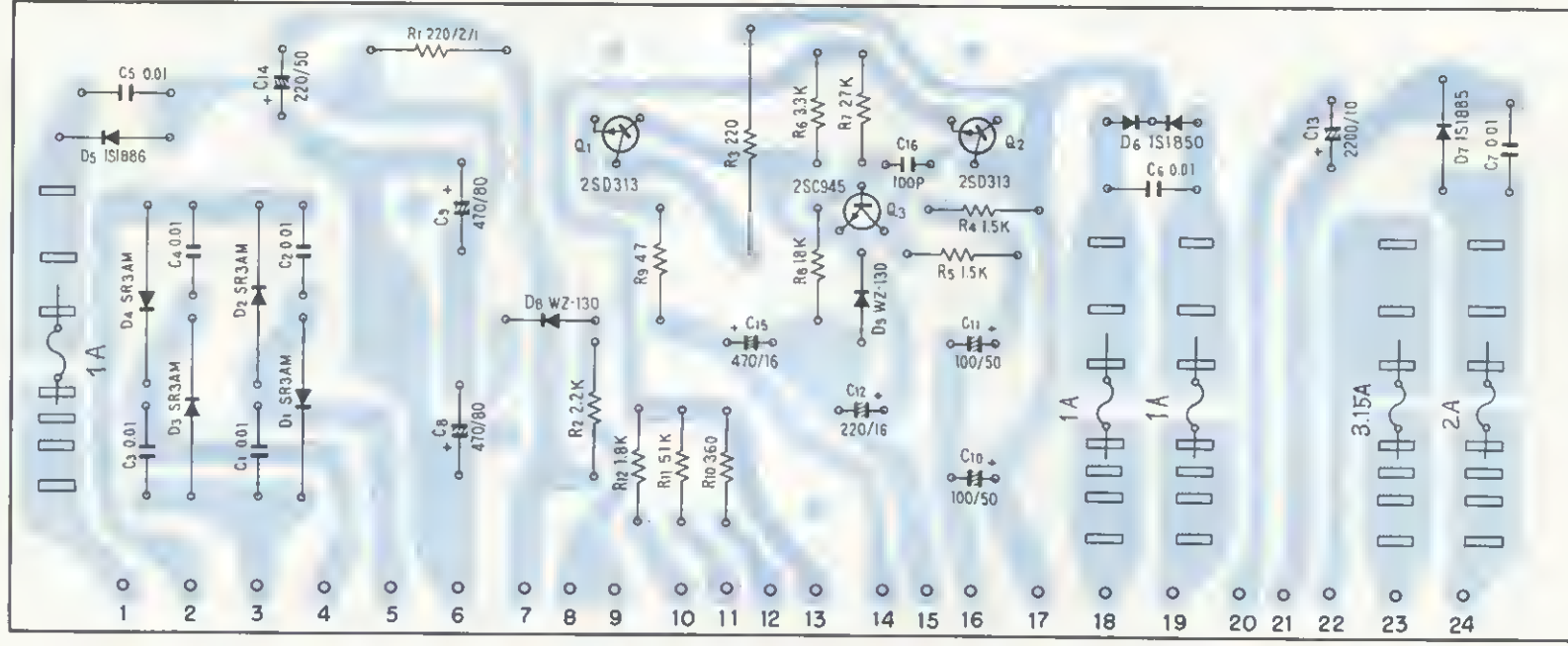
2SC945



2SD313



## Foil Side (AWR-064-0)



Parts List of Power Supply Circuit Assembly (AWR-064-0)

SEMICONDUCTORS

Symbol	Description			Part No.	
Q1	Transistor	2SD313-E			
Q2	Transistor	2SD313P-E or D			
Q3	Transistor	2SC945-Q or R			
D1	Diode	SR3AM-8			
D2	Diode	SR3AM-8			
D3	Diode	SR3AM-8			
D4	Diode	SR3AM-8			
D5	Diode	1S1886			
D6	Diode	1S1850			
D7	Diode	1S1885			
D8	Zener diode	WZ-130			
D9	Zener diode	WZ-130			

RESISTORS

Symbol	Description			Part No.	
R1	Carbon film	220	1/4W	RD4PS 221J	
R2	Metal oxide	2.2k	1W	RS1P 222K	
R3	Wire wound	220	5W	RT58 221K	
R4	Carbon film	1.5k		RD4PS 152J	
R5	Carbon film	1.5k		RD4PS 152J	
R6	Carbon film	3.3k		RD4PS 332J	
R7	Carbon film	27k		RD4PS 273J	
R8	Carbon film	18k		RD4PS 183J	
R9	Carbon film	4.7		RD4PS 4R7J	
R10	Carbon film	360		RD4PS 361J	
R11	Carbon film	5.1k		RD4PS 512J	
R12	Carbon film	1.8k		RD4PS 182J	

CAPACITORS

Symbol	Description			Part No.	
C1	Ceramic	0.01	150V	ACG-004-0	
C2	Ceramic	0.01	150V	ACG-004-0	
C3	Ceramic	0.01	150V	ACG-004-0	
C4	Ceramic	0.01	150V	ACG-004-0	
C5	Ceramic	0.01	150V	ACG-004-0	
C6	Ceramic	0.01	150V	ACG-004-0	
C7	Ceramic	0.01	150V	ACG-004-0	
C8	Electrolytic	470	80V	ACH-038-0	
C9	Electrolytic	470	80V	ACH-038-0	
C10	Electrolytic	100	50V	CEA 101P 50	
C11	Electrolytic	100	50V	CEA 101P 50	
C12	Electrolytic	220	16V	CEA 221P 16	
C13	Electrolytic	2,200	10V	CEA 222P 10	
C14	Electrolytic	220	50V	CEA 221P 50	
C15	Electrolytic	470	16V	CEA 471P 16	
C16	Ceramic	100p	50V	CCDSL 101K 50	